EXHIBIT N

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF PENNSYLVANIA

MARTHA JULIA HIDALGO VILLAFANE, Individually, As Executor and as Personal Representative of the Estate of Martha Erika Alonso Hidalgo, *et al.*,	§	
Plaintiffs,	§	**Civil Action No. 2:20-cv-06393-RBS**
v.	§	
AGUSTA WESTLAND PHILADELPHIA CORPORATION, *et al.*,	§	
Defendants.	§	

DECLARATION OF COLIN A. SOMMER

I, Colin A. Sommer, under penalty of perjury, make this declaration in support of Plaintiffs' opposition to Defendants Leonardo, S.p.A.'s and Agusta Westland Philadelphia Corporation's motion to dismiss pursuant to the doctrine of *forum non conveniens* and for failure to join a necessary and indispensable party.

1. I am over the age of 18 years, have personal knowledge of the facts stated herein, and I am competent to testify to the statements in this affidavit if called upon to do so.

2. I am the Vice President of Aeroscope, Inc., 11901 Allison St., Broomfield, Colorado 80020. Aeroscope, Inc. is involved in forensic engineering, aircraft accident reconstruction, manufacturing disputes, computer modeling, and failure analysis of airframes, engines, and aircraft systems. My curriculum vitae is attached as Exhibit "1."

3. In May 1997, I graduated from the University of Michigan, Ann Arbor, College of Engineering with a Bachelor of Science in Engineering (BSE) in Civil & Environmental Engineering with an emphasis in Structural Design. My curriculum at the University of Michigan included Material

Science for Engineers, Solid Mechanics, Thermodynamics, Fluid Mechanics, Structural Theory & Design, Metal Structure Design, and Electrical Engineering. These classes along with my experience investigating over 700 airplane and helicopter accidents provides the necessary engineering theory and tools to scientifically analyze the design and operation of the electromechanical flight control system components of the subject Agusta A109S helicopter. The course work completed for my engineering degree included the same fundamental design principles and theory that Leonardo / Agusta Westland utilized during the design process. I utilized my education and experience in arriving at my opinions in this matter.

4. I am a licensed professional mechanical engineer, Colorado Certificate # PE-43554. The 8-hour Principles and Practices of Engineering Exam as required for professional licensure requires an engineering degree from a 4-year accredited school, 4-years of engineering experience and completion of the 8-hour Fundamentals of Engineering Exam. I am also a member of the National Counsel of Examiners for Engineering and Surveying (NCEES), which qualifies me for professional engineering licensure in any State or Territory of the United States. My licensure also qualifies me to approve and sign engineering drawings for electromechanical components of the subject helicopters flight control system. My primary field of study and experience for professional engineering licensure is in Mechanical Engineering Systems and Machine Design. These fields of study and the exam itself specifically cover the following topics:

a. Material Properties and Selections
b. Strength of Materials
c. Fatigue Theory
d. Vibration Analysis
e. Stress Analysis
f. Structural Analysis
g. Mechanism Analysis
h. Fluid Mechanics
i. Thermodynamic Properties & Cycles
j. Welding
k. Fits & Tolerances
l. Bearings
m. Gears
n. Springs

o. Shafts
p. Fasteners
q. Codes and Standards
r. Manufacturing Processes
s. Quality Control

My professional mechanical engineering licensure and verification by NCEES are evidence that my work experience, education, and qualifications in mechanical engineering are sufficient for professional practice in the United States. Each of the foregoing areas of study is directly related to the fundamental design concepts and engineering of the electromechanical flight control system components installed in the subject Agusta A109S helicopter. Prior to taking and passing the Professional Engineering (PE) exam, I completed the 8-hour Fundamentals of Engineering (FE) exam. The FE exam specifically covered Fluid Mechanics, Thermodynamics, Heat Transfer, and Mechanical Design and Analysis; these areas of study are also directly related to the design and operation of the components at issue in this matter. It is not required to be a former design engineer or employee of a specific component manufacturer to possess the capability to analyze and evaluate the fundamental design concepts/principles and ascertain the failure modes of that specific product. Design of the electromechanical flight control system components are completely contained within the realm of mechanical engineering concepts and theory.

5. I was trained by the National Transportation Safety Board (NTSB) (2004) and the Southern California Safety Institute (SCSI) (2005) in Aircraft Accident Investigation. The NTSB Academy was assembled with the primary purpose of training its own governmental accident investigators prior to entering the field. The SCSI is a private aviation accident investigation academy operated by former Air Force Accident Investigators that train individuals from government and civil organizations from around the world, including the United States Military, FAA, NTSB and a host of commercial airline operations. Both accident investigation academies taught and I participated in specific courses on the following:

a. Conducting accident investigations
b. Biomedical investigations
c. Accident Investigation Pathology
d. Survival Factors
e. Aircraft performance and Impact Kinematics
f. Aircraft maintenance

g. Weather
h. Human factors
i. Fracture analysis
j. Aeromedical Investigations
k. Failure Analysis of Airframes and Engines
l. Mid-air Collisions
m. In-flight Breakups
n. Fault Tree Analysis
o. Piston and Turbine Engine Failures
p. Pre and post impact fire analysis
q. Metallurgy and material science
r. Investigation Methodology
s. Causation Theory
t. Wreckage pattern analysis
u. Structural analysis
v. Propeller analysis
w. Aircraft structure and system design
x. Aerodynamics

These courses specifically addressed the industry approved methodologies and techniques necessary to properly investigate and ascertain the most likely cause of an aircraft crash.

6. The methodology I employ in every accident investigation and reconstruction, including this one, is in accordance with the guidance found in the publications and manuals that are the widely used and universally accepted standards. Included in the list of manuals used as guidance are: The International Civil Aviation Organization (ICAO) Manual of Aircraft Accident and Incident Investigation; United States Air Force Guide to Mishap Investigation; The United States Navy Handbook for Aircraft Accident Investigation; The National Transportation Safety Board (NTSB) Major Investigation Manual; The Transport Safety Board of Canada Investigations Manual and the University of Southern California Manual of Aircraft Accident Investigation. I have personally developed detailed textual and visual publications on accident investigation methodology. I was responsible for the technical

content of Chapters 1 and 2 of the "Helicopter Crash Litigation"[1] manual. Authoring industry accepted and peer reviewed texts such as this one, as I have done, is one of the bases for meeting the requirements for rules under Daubert. I have utilized the above knowledge, information, and experience in arriving at my opinions in this matter. My investigation methodology has been accepted by numerous state and federal courts (e.g., Westlaw Journal Aviation, January 20, 2012, Volume 29, Issue 24, "Most Claims stand in pilot's suit over Lycoming engine").

7. I have been retained by the Plaintiffs in this case as an expert accident reconstructionist, and I have reviewed the Final Accident Report/Probable Cause Report from the Mexican Agencia Federal de Aviacion Civil ("AFAC") with file No. ACCDTARA004/2018MMPB, concerning the crash of the Agusta A109S helicopter, registration XA-BON ("the subject helicopter") on December 24, 2018.

8. Based on my review of the AFAC Report, all indications are that the probable cause of this crash was the failure of the #1 Stability Augmentation System ("SAS") electromechanical roll linear actuator; also referred to as ROLL SAS1. Failure of this component was due to a manufacturing defect, design defect and/or failure of the manufacturer's quality control system. Post-crash inspection of this component revealed two loose screws inside the case where the control circuit board is located.

9. This type of linear actuator, part number 4012373-909, including the subject ROLL SAS1, is manufactured, assembled and inspected by Honeywell International Inc. ("Honeywell") in the United States pursuant to Technical Standard Order TSO-C9c, which is granted by the United States Federal Aviation Administration ("FAA"). Honeywell is located in Phoenix, Arizona. Attached hereto as Exhibit "2" is a true and correct copy of the FAA TSO.

10. The stability augmentation system and associated actuators are included in the overall FAA type certified helicopter. Attached hereto as Exhibit "3" is a true and correct copy of the FAA type certificate data sheet (no. H7EU) for the subject helicopter. Defendant Leonardo, S.p.A. is the holder of this type certificate.

11. The Mexican investigative authorities engaged the U.S. National Transportation Board (NTSB) to assist in the investigation into the cause of the crash. It is apparent that the Mexican authorities ultimately focused on the subject helicopter's flight control and stability augmentation system

[1] Robb, Gary C. (2010). *Helicopter Crash Litigation*. Tucson, Arizona: Lawyers & Judges Publishing Company, Inc. Part 1: The Basics of Helicopter Structure, Operation and Performance and Part 2: Helicopter Crash Dynamics – Common Crash Sequence and Impact Scenarios

components, and more specifically the SAS electromechanical roll linear actuators, because of the nature of the helicopter's rapid loss of control and inversion seconds before the crash.

12. The NTSB performed or arranged for a computed tomography (CT) scan of the subject actuators, which revealed the two loose screws that are intended to secure the electronic control board to the actuator. After the loose screws were identified, the subject actuators were dissembled at the facility of the actuator's manufacturer, Honeywell. The Honeywell facility utilized for the disassembly is located in Boyne City, Michigan, in the United States. The findings from the disassembly and also of the testing to determine the potential effects of the loose screws creating unintended circuitry in the controls of the actuator are contained in Annex E of the AFAC report.

13. Annex E of the AFAC report documents that a loose screw such as occurred with the subject SAS1 roll actuator can create an unintended and un-commanded hard-rollover of the helicopter without pilot input.

14. The information and images contained in Annex E are consistent with the loose screws having become displaced prior to the loss of control and crash of the subject helicopter. Based on the information and images in Annex E, it is likely that the screws were displaced due to improper manufacturing, design, and/or quality control, which occurred in the United States.

15. It also appears, based upon the AFAC Report, that the subject helicopter's manufacturer, Defendant Leonardo, S.p.A., failed to properly warn operators and maintainers of this helicopter of the dangers and serious risks of operating with only one functioning SAS electromechanical roll linear actuator. There were no service bulletins/instructions, POH limitations, or other warnings related to the danger of this condition besides a recent modification of the aircraft's Master Minimum Equipment List (MMEL) that was not sufficient to warn operators, maintainers or regulators of this danger.

16. I am aware of two similar crashes involving Agusta A109 helicopters involving un-commanded movements of the roll and/or pitch linear actuators, both of which took place prior to this crash. One took place in Alexandria, Minnesota in 2016, and the other took place in Eastland, Texas in 2012. The helicopter's manufacturer, Defendant Leonardo, S.p.A., and its' United States affiliate, Defendant Agusta Westland Philadelphia Corporation, would be aware of these crashes. Litigation against Defendants Agusta Westland Philadelphia Corporation and Leonardo, S.p.A. arising from the most recent crash is currently pending in the United States.

17. Title 14 CFR Part 21.3 requires the type certificate holder to report any failure, malfunction, or defect in any product or article manufactured by it that it determines has resulted in an "Any structural or flight control system malfunction, defect, or failure which causes an interference with normal control of the aircraft for which derogates the flying qualities." Although many components that make up the flight control and stability augmentation system in the Agusta A109S are not physically manufactured by Leonardo, the components are incorporated in Leonardo's overall type design; thus, Leonardo is responsible for reporting to the FAA malfunctions and defects found in all components of their type certified helicopter that have caused a sudden loss of control. There is no indication that this was done by the Defendants.

18. According to FAA Advisory Circular (AC) 20-109A, "The Service Difficulty Program is an information system designed to provide assistance to aircraft owners, operators, maintenance organizations, manufacturers, and the Federal Aviation Administration (FAA) in identifying aircraft problems encountered during service. The Service Difficulty Program provides for the collection, organization, analysis, and dissemination of aircraft service information to improve service reliability of aeronautical products. The primary sources of this information are the aircraft maintenance facilities, owners, and operators."[2] Furthermore, "When a system component or part of an aircraft (powerplant, propellers, or appliances) functions badly or fails to operate in the normal or usual manner, it has malfunctioned and should be reported. Also, if a system, component, or part has a flaw or imperfection which impairs function or which may impair future function, it is defective and should be reported. While at first sight it appears this will generate numerous insignificant reports, the Service Difficulty Program is designed to detect trends. Any report can be very constructive in evaluating design or maintenance reliability."[3]

19. The importance and validity of the SDR program is further detailed in a September 15, 2000, the Department of Transportation issued a final rule regarding Part 121, 125, 135, and 145 regulation relating to Service Difficulty Reports. "The FAA amends reporting requirements for air carrier and certificated domestic and foreign repair station operators concerning failures, malfunctions, and defects of aircraft, aircraft engines, systems, and components. This action was prompted by an internal Federal Aviation Administration (FAA) review of the effectiveness of the reporting system and by air carrier industry concern over the quality of the data being reported. The objective of the rule is to improve the reporting system to effectively collect and disseminate clear and concise safety information

[2] AC 20-109A, dated 4/8/93, Paragraph 4
[3] AC 20-109A, dated 4/8/93, Paragraph 8b

to the aviation industry." Furthermore, "The reports submitted by certificate holders and certificated repair stations, known as service difficulty reports (SDR's), provide the FAA with airworthiness statistical data necessary for planning, directing, controlling, and evaluating certain assigned safety-related programs. Currently, the Service Difficulty Reporting System (SDRS) is used in the following ways:

- FAA Analysis of SDR Data
- To rapidly disseminate defect trends, problems, and alert information that could pertain to future aviation safety issues to appropriate segments of the aviation community and the FAA
- Whenever there is an accident, the Office of Accident Investigation draws on this data
- Supporting investigations into accidents and incidents
- National Transportation Safety Board (NTSB) personnel request data from the SDRS to assist in their accident investigations

Foreign countries and branches of the U.S. military services use the SDR data for research." The digital database is readily available through the FAA website and other 3rd party suppliers.

20. Liability discovery to investigate this manufacturing defect for this litigation will involve laboratory examination of the electromechanical roll linear actuators in question and their associated components, in a similar fashion to what was done by the National Transportation Safety Board as part of the AFAC investigation.

21. I have been involved in investigating other aviation crashes that occurred in Mexico, and in those cases, we were unable to locate a suitable lab for the kind of forensic examination required, and I am not aware of any labs in Mexico that would be suitable for examining the subject roll actuators required for this investigation.

22. Laboratory examination of the components in question will be required to take place in the United States by the parties' experts whether this case proceeds in United States or Mexico.

23. Manuals and other publications related to this aircraft are printed in English. This is consistent with the sale documents attached to Defendants' motion in Exhibit E, the Declaration of Emilio Dalmasso, noting that the manuals for the subject helicopter were being provided in English, and with the Minimum Equipment List used by the operator, Servicios Aereos de Altiplano, C.V. de R.L., being published in English.

24. Leonardo Helicopters does not operate a sales, service or training facility in the country of Mexico. Leonardo Helicopter USA is headquartered in Philadelphia, Pennsylvania which is also the location of their training center and one of their primary service and support centers servicing North, South and Central America. They have an additional Gulf of Mexico Support Center located in Broussard, Louisiana.[4] Any documentation from an engineering and testing perspective that will be necessary to the investigation will not be located in Mexico and will be much more easily accessed through the closest geographic sales, service, training and support locations, which are in the United States.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 6th day of May 2021 in Broomfield, Colorado.

Colin A. Sommer, P.E.

[4] https://usa.leonardocompany.com/en/helicopters

Exhibit 1 – Curriculum Vitae of Colin A. Sommer, P.E.

CURRENT POSITION

Vice President and Aircraft Mishap and Failure Investigator with Aeroscope, Inc. Aeroscope, Inc. performs engineering services related to aviation accident analysis, forensic engineering, computer modeling, failure analysis and testing of airframes, engines, and aircraft systems. Aeroscope has investigated in excess of 1000 aircraft accidents and incidents including the well-known crashes of TWA 800, United 232, United 585, Continental 1713, USAir 427, Alaska Airlines 261, Silk MI 185, Flash Air 604, SAS SK686, Air Algérie Flight 6289, Helios 522, Air France Flight 447, Comair Flight 5191, Egypt Air Flight 990, Jenni Rivera Learjet 25, Troy Gentry Schweizer 269C, Malaysia Airlines Flight 370, Kobe Bryant S-76B and the crashes that killed the former governor of Missouri and golfer Payne Stewart. Aeroscope was also hired by the State of Florida to aid the criminal prosecution resulting from the crash of Value Jet 592.

EDUCATION

- Bachelor of Science Engineering, Civil and Environmental Engineer
  - Emphasis in Structural Design
  - University of Michigan, Ann Arbor
  - Dean's Honor List two semesters

- NTSB Academy, Washington DC, Aircraft Accident Investigator Training Program. Training included: Accident Investigation, Failure Analysis of Airframes and Engines, Mid-air Collisions, In-flight Breakups, Fault Tree Analysis, Piston and Turbine Engine Failures, Pre and Post impact Fire Analysis, Metallurgy, Pathology, Biomedics, Crash Survivability, Aircraft Performance, Impact Kinematics, Propeller Analysis, Aviation Weather, Aircraft Maintenance, and many others. (May 10, 2004)

- Southern California Safety Institute, Aircraft Accident Investigation Training Program. Training included: Investigation Methodology, Causation Theory, Wreckage Pattern Analysis, Aviation Operations, Weather, Aircraft Performance, Aircraft Maintenance, Human Factors, Crash Survivability, Structural Analysis, Fire Damage, Reciprocating and Turbine Engine Failure, Propeller Analysis, Metallurgy and Material Science, Aircraft Structure and System Design, Impact Dynamics and Kinematics, Aerodynamic Loading, Aeromedics, and many others. (October 10-21, 2005)

- Teledyne Continental Motors Aviation Technician Advanced Training Program. Training included: 40 hours of advanced factory training, with focus on General Engine Theory of Operation, Crankcase Threading, Crankshaft Component R & R, Cylinder R & R, Fuel Injection System Calibration, Tour of Continental Motors' Factory, 100-Hour/Annual Inspection Topics, Cylinder Borescope Inspections, TCM Ignition Systems hands-on to include tear down and setting internal timing and Service Bulletin Exercises. (June 20-25, 2010)

- FAA Ratings
  - Private Pilot Certificate, Single Engine Land (September 1, 2006)
  - Multi Engine Land (October 14, 2011)
  - Instrument Airplane (March 17, 2009)
  - Type Rating: CE-500 Series Cessna Citation Turbojet (SIC) (March 16, 2018)

CURRICULUM VITAE
COLIN A. SOMMER, P.E.
Page Two

- Routine training in numerous aspects of aircraft accident reconstruction and failure analysis
- Fundamentals of Engineering (FE) / Engineer in Training (EIT) Completed (July 5, 2007)
- Principles & Practice of Engineering Exam (PE) Completed (June 9, 2008)
- Licensed Professional Engineer – State of Colorado No. PE-43554 (September 22, 2009)

ENGINEERING EXPERIENCE

- I have personally investigated over 700 different aircraft accidents including:
  Alaska Airlines Flight 261 McDonnell Douglas MD 83
  Silk Air MI 185 Boeing 737-300
  Oklahoma State Basketball Team King Air 200
  Governor Mel Carnahan Cessna 335
  Payne Stewart Learjet 35
  Flash Air 604 Boeing 737-300
  Air Algérie Flight 6289
  Comair Flight 5191
  Helios Flight 522
  Aeroméxico Flight 2431
  Air France Flight 447
  Egypt Air Flight 990
  Jenni Rivera Learjet 25
  Troy Gentry Schweizer 269C
  Malaysia Airlines Flight 370
  Kobe Bryant Sikorsky S-76B
  Other single and multi-engine aircraft both piston and turbine as well as helicopter

- I have personally investigated accidents involving the following equipment types:

Aero Commander	Lancair Aircraft
Aero Vodochody L-39	Learjet Aircraft
Air Tractor	Leonardo (Agusta) Helicopters 109, 119
Airbus (Eurocopter) Helicopters	Light Sport Aircraft
Airbus Fixed Wing 310, 320, 330	Lockheed L-100
Allison/Rolls Royce Engines	Marvel Schebler (Precision Airmotive)
American Champion	MBB Helicopters
Astra	McDonnell Douglas Helicopters
Beech 1900	McDonnell Douglas MD-80, DC-10
Beech King Air 90, 200, 300	Mitchell Wing
Beechcraft General Aviation	Mitsubishi MU-2B
Bell Helicopters	Mooney General Aviation
Bellanca	Pilatus PC-12
Boeing 737, 747, 767, 777, Vertol	Piper General Aviation

Bombardier Challenger, CRJ
Caterpillar Fork Lift
Cessna Citation
Cessna General Aviation
Cirrus Aircraft
Commander Aircraft
Continental Motors Engines
Convair 580
De Havilland
Dassault Aircraft
Diamond Aircraft
Eclipse 500
Embraer ERJ-190
Ercoupe
Express
Fairchild/Swearingen
Grumman American
Gulfstream
Hawker Aircraft
Hiller Helicopter
Honeywell (Garrett) Turbine Engines
Hughes Helicopters
Kaman Helicopters
Lake Aircraft
Pratt & Whitney Engines
Rans
Raytheon
Raytheon Aircraft
Revolution Mini 500
Robinson Helicopter
Rockwell OV-10
Rotax Engines
Safari Aircraft
Safran (Turbo Mecca) Engines
Schweizer Helicopter
Sikorsky S-58, S-61, S-76, UH-60
Socata Aircraft
Taylorcraft Aircraft
Textron Lycoming Engines
Thrush Aircraft
Ultralight
Vans
Velocity Aircraft
Westwind
Zenair Aircraft
Zenith Aircraft
Zivco

PROFESSIONAL MEMBERSHIPS

- International Society of Air Safety Investigators (ISASI)
- Vice President Colorado/Wyoming ISASI Chapter
- Aircraft Owners & Pilots Association (AOPA)
- National Council of Examiners for Engineering & Surveying (NCEES) (June 26, 2009)

PUBLICATIONS

- Robb, Gary C. (2010). *Helicopter Crash Litigation*. Tucson, AZ: Lawyers & Judges Publishing Company Inc. – Technical Advisor and Contributor

CURRICULUM VITAE
COLIN A. SOMMER, P.E.
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AREAS OF SPECIALIZATION

- Aircraft Auto Pilot Systems and Failures
- Aircraft Control Systems
- Aircraft Crash Survival Design
- Aircraft Crashworthiness
- Aircraft Design and Operation
- Aircraft Fuel Servo Operation
- Aircraft Fuel Systems
- Aircraft Maintenance Related Accident Investigation
- Aircraft Navigation Systems
- Aircraft Performance
- Aircraft Systems Analysis
- Aircraft Vacuum Systems
- Avionics Component Failures
- Carburetor Design and Operation
- FAA Airworthiness Directives
- FAA Regulations
- Fixed Wing Accident Reconstruction Analysis and Testing
- Fixed Wing Aerodynamics
- Flight Path Analysis
- Fluid Mechanics
- Fuel Injection Systems
- Gas Turbine Governing and Fuel Control Systems
- Helicopter Accident Reconstruction Analysis and Testing
- Helicopter and Fixed Wing Structural Design and Failure Analysis
- In-Flight Break Up
- Internal combustion engine failures
- Mechanical Engineering Design
- Mechanical, Pneumatic and Hydraulic Systems
- Mid Air Collisions
- Pre and Post Impact Fire Investigation
- Pressurization Systems
- Propeller Analysis
- Rotorcraft Aerodynamics
- Turbine engine failures
- Vehicular Kinematic Impact Analysis and Mathematical Modeling of Crashes
- Video Animation

Exhibit 2 – FAA TSO

RGL Home

TSO Index of Articles

TSO Index of Articles Information

TSO Number:
TSO-C9c

TSO Title:
AUTOMATIC PILOTS

Latest Update:
09/16/2008

TSO Holder's Name:
Honeywell International Inc.

TSO Holder's Address:
21111 No. 19th Ave.
Phoenix AZ 85027-2708
United States

Responsible Office:
Los Angeles ACO Branch, Tel: +1 (562) 627-5200

Part/Model Number & Name:
2586137-( )
2587335( )
2589175-( )
2592676-901
2592800-( )
2597545
4011049-( )
4012373-( )
4015373-( )
4015374-( )
4015901-( )
4018639-( )
4019286-( )
4025008-( )
4029377-( )
4031474-( )
4031475-( )
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4034241-972
4040749-( )
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4083935-902
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4084564-( )
4084564-1
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615743-27
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7000298-( )
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7001975-( )
7002260-( )
7002541-( )
7002542-( )
7002800-( )
7003032-( )
7003100-( )
7003183-( )
7003227-( )
7003245-( )
7004126-( )
7004187-( )
7004305-( )
700473-( )
GH-14
GH-14A
MM7033384-004 PN EB7031236-( ) ===== Field Loadable Primus EPIC
SFG 980
SP-50F
SP717 7004206-( )
SPZ-200
SZ-400 7003180-( )

VG-341
EB7036889-00101 ===== Field Loadable Primus EPIC System For installation on the Dassault F900EX EASy
MM7027704-011 ===== Field Loadable EPIC System
PS7027709-( ), Dash No.-00111, Software Product ID MM7027704-012 ===== Field Loadable Primus EPIC System
EB7036889-( ) Dash No. -00203, Software Product ID MM7033340-004 ===== Field Loadable Primus EPIC System
EB7036889-( ) Series, Dash No.-00103, Software Product ID MM7031351-010 ===== Field Loadable Primus EPIC System
7017300-( ) series ===== IC-800 Integrated Avionics Computer
065-00195-0100 ===== KTA 2810 Trim Adapter
050-03718-0000 ===== Installation Kit

Comments

Comments:

Exhibit 3 – FAA Type Certificate Data Sheet H7EU

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

H7EU
Revision 29
AGUSTA
Model A109
Model A109A
Model A109A II
Model A109C
Model A109K2
Model A109E
Model A119
Model A109S
Model AW119 MKII
Model AW109SP
April 23, 2021

TYPE CERTIFICATE DATA SHEET NO. H7EU

This data sheet, which is part of Type Certificate No. **H7EU**, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder: Leonardo S.p.a.
Helicopter Division
Piazza Monte Grappa, 4
00195 – Rome, Italy

Type Certificate Holder Record: Agusta S.p.A. was previous name of TC holder. The company name change history is presented below.

Type Certificate Holder	Period
Costruzioni Aeronautiche Giovanni Agusta Via Giovanni Agusta, 520; 21017 Cascina Costa di Samarate (VA) – Italy	28 May 1975 – 29 November 1988
Agusta S.p.A. Via Giovanni Agusta, 520; 21017 Cascina Costa di Samarate (VA) – Italy	30 November 1988 - 19 December 1996
Agusta un'azienda di Finmeccanica S.p.A. Via Giovanni Agusta, 520; 21017 Cascina Costa di Samarate (VA) – Italy	20 December 1996 - 27 December 1999
Agusta S.p.A. Via Giovanni Agusta, 520; 21017 Cascina Costa di Samarate (VA) – Italy	28 December 1999 - 31 May 2011
AgustaWestland S.p.A. Via Giovanni Agusta, 520; 21017 Cascina Costa di Samarate (VA) – Italy	1 June 2011 - 30 July 2014
AgustaWestland S.p.A. Piazza Monte Grappa, 4; 00195 Roma - Italy	31 July 2014 - 31 December 2015
Finmeccanica S.p.A., Helicopter Division Piazza Monte Grappa, 4; 00195 Roma - Italy	1 January 2016 - 14 July 2016
Leonardo S.p.A., Helicopters Piazza Monte Grappa, 4; 00195 Roma - Italy	since 15 July 2016

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I. Model A109 (Normal Category Helicopter) approved June 1, 1975.

Engines.

Two (2) Detroit Diesel Allison Division of General Motors Corporation Model 250-C20 turboshaft engines.

Bendix gas producer fuel control DP-N1.
Bendix power turbine governor AL-AA1.

Fuel.

For all temperatures:
MIL-T-5624 grade JP-4
ASTM D-1655 Jet B

For temperature above -18ºC (0ºF):
MIL-T-5624 grade JP-5
ASTM D-1655 Jet A
ASTM D-1655 Jet A1
See Note 4

Engine Limits.

All-engine operation

Takeoff (5 minutes)	
Torque	113% (302 lb.ft) (346 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	102 % (52000 rpm)
Gas temperature	793ºC (1460ºF)
Maximum Continuous	
Torque	113% (302 lb.ft)(346 shp)
Output shaft speed (N2)	95-100% (5716-6016)
Gas producer speed (N1)	101% (51490 rpm)
Gas temperature	737ºC (1358ºF)
Single-engine operation (emergency)	
Takeoff (5 minutes)	
Torque	131% (350 lb.ft)(400 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	102% (52000 rpm)
Gas temperature	793ºC (1460ºF)
Maximum Continuous	
Torque	126% (336 lb.ft)(385 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	101% (51490 rpm)
Gas temperature	777ºC (1430ºF)

(See FAA-approved Helicopter Flight Manual for rpm and temperature transient limits).

Rotor Limits.

Power Off	
Maximum	110 % (424 rpm)
Minimum	90 % (346 rpm)
Power On	
Maximum	100 % (385 rpm)
Minimum	95 % (365 rpm)

Rotor Speed Warning.

Low Speed	95 % (365 rpm)
High Speed	105 % (404 rpm)

Airspeed Limits.

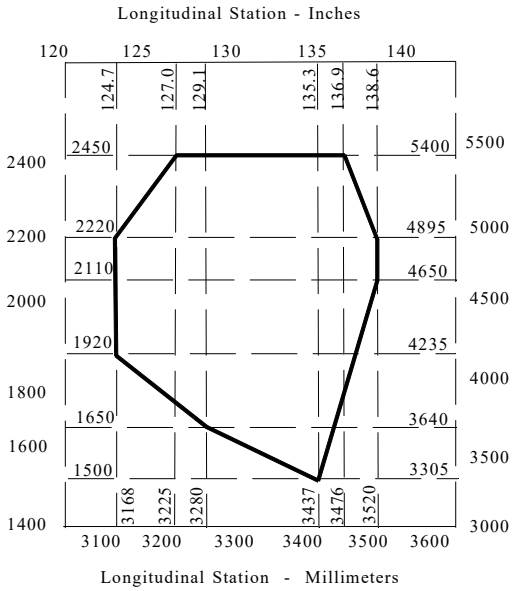
Never Exceed Speed (V_{NE})	168 kts	IAS

For reduction of V_{NE} with altitude and OAT, see RAI-approved Helicopter Flight Manual.

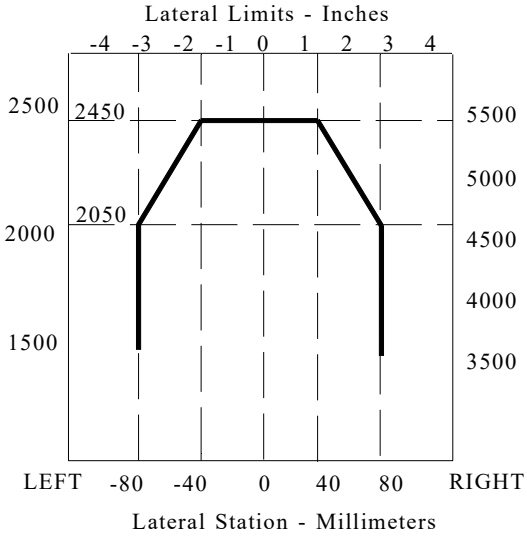
Maximum Gear Operating Speed (V_{LO})	120 kts	IAS
Maximum Gear Extended Speed (V_{LE})	120 kts	IAS
Maximum Forward Touchdown Speed	40 kts	IAS

I. Model A109 (cont'd)

C.G. Range (Gear Down). Longitudinal Limits
(Gear retraction moment is a 4 kgm (347 lb. in) moving CG forward).



CG Range (Gear Down).



Empty Weight & CG Range. (None)

Maximum Weight. 2450 Kg. (5400 lb)

Minimum Crew. One pilot

Maximum Passenger. 7: For aircraft conforming with Agusta Report 109-06-01.
1 at sta 1650 mm (65 in)
3 at sta 2485 mm (98 in)
3 at sta 3265 mm (129 in)

0: For aircraft in "green" delivery configuration conforming with Agusta Report 109-06-03.

Maximum Baggage.

150 Kg. (330 lb) at sta 4920 mm (194 in)
Maximum floor loading for baggage compartment:
500 Kg/m^2 (102 lb/ft2)
Maximum load per tie-down fitting:
91 Kg. (200 lb.)

Fuel Capacity.

Total : 148.4 U.S. Gal. (559 lit.) in two tanks of 74.2 U.S. Gal. (279.5 lit.) each, at sta. 3650 mm (144.0 in.)

Usable : 146 U.S. Gal. (550 lit.)
See NOTE 1 for unusable fuel.

Oil Capacity Engines.

2 U.S. Gal. (7.7 lit.) each engine, at sta. 3053 mm (136 in)
See NOTE 1 for undrainable oil.

Maximum Operating Altitude.

4,560 m (15,000 ft)

Rotor Blade and Control Movements.

For rigging information refer to the Model A109 Maintenance Manual.

II. Model A109A (Normal Category Helicopter), approved April 2, 1976.

Engines.

Two (2) Detroit Diesel Allison Division of General Motors Corporation Model 250-C20B turboshaft engines.

Bendix gas producer fuel control DP-N2.

Bendix power turbine governor AL-AA1.

Fuel.

For all temperatures:
MIL-T-5624 grade JP-4
ASTM D-1655 Jet B

For temperatures above -18ºC (0ºF):
MIL-T-5624 grade JP-5
ASTM D-1655 Jet A
ASTM D-1655 Jet A1
See NOTE 4

Engine Limits.

All engine operation

Takeoff (5 minutes)	
Torque	113% (302 lb.ft) (346 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)
Maximum continuous	
Torque	113% (302 lb.ft) (346 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	738ºC (1360ºF)

Single-engine operation (emergency)

Takeoff (5 minutes)	
Torque	131% (350 lb. ft) (400 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)
Maximum continuous	
Torque	126% (336 lb.ft) (385 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)

(See FAA-approved Helicopter Flight Manual for rpm and temperature transient limits).

Rotor Limits.

Power off:

Maximum	110%	(424 rpm)
Minimum	90%	(346 rpm)

Power on:

Maximum	100%	(385 rpm)
Minimum	95%	(365 rpm)

Rotor Speed Warning.

Low speed	95%	(365 rpm)
High speed	105%	(404 rpm)

Airspeed Limits.

Never exceed speed (V_{NE}) 158 knots IAS (See NOTE 7)

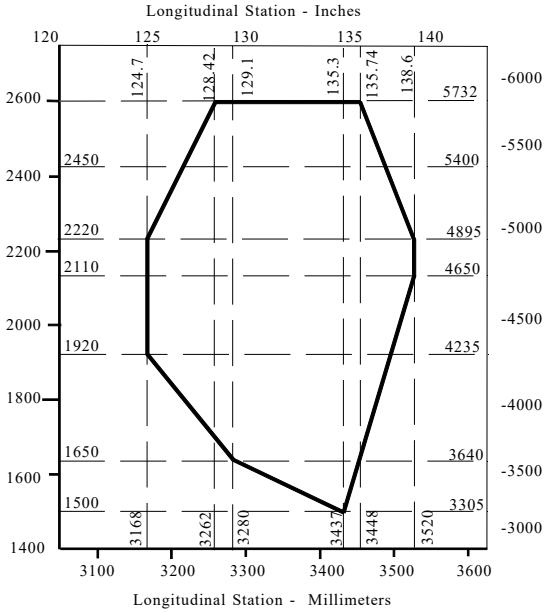
For reduction of V_{NE} with altitude and OAT, see RAI-approved Helicopter Flight Manual.

Maximum Gear Operating Speed (V_{LO})	120 kts	IAS
Maximum Gear Extended Speed (V_{LE})	120 kts	IAS
Maximum Forward Touchdown Speed	40 kts	IAS

CG Range (Gear Down).

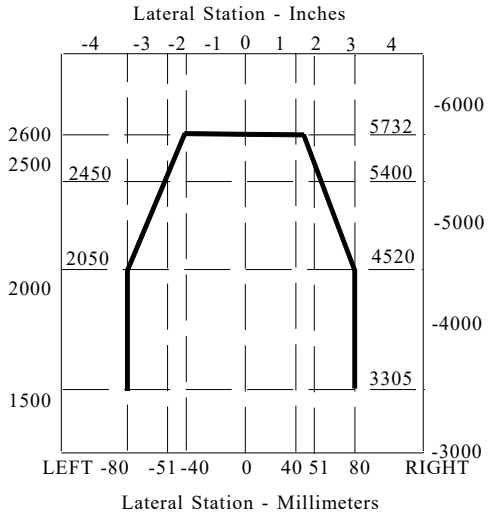
Longitudinal Limits

(Gear retraction moment is 4 kgm (347 lb.in) moving CG forward)



CG Range (Gear Down).

Lateral Limits



II. Model A109A (Normal Category Helicopter) (cont'd).

Empty Weight & CG Range.	(None)
Maximum Weight.	2600 kg (5732 lb.) (See NOTE 7)
Minimum Crew.	One pilot at Sta. 1630 mm (64 in.) to 1695 mm (67 in.) See NOTE 5.
Maximum Passengers.	7: For aircraft conforming with Agusta Report: 109-06-02. 1 at Sta. 1630 mm (64 in) to 1695 mm (67 in) (See NOTE 4). 3 at Sta. 2485 mm (98 in) 3 at Sta. 3265 mm (129 in) 0: For aircraft in "green" delivery configuration conforming with Agusta Report 109-06-07
Maximum Baggage.	150 kg. (330 lb.) at sta 4920 mm (194 in) Maximum floor loading for baggage compartment: 500 kg/m2 (102 lb/ft2) Maximum load per tie-down fitting: 91 kg (200 lb.)
Fuel Capacity.	Total: 148 U.S. Gal. (559 lit.) in two tanks of 74.2 U.S. Gal. (279.5 lit.) each, at sta 3652 mm (144.0 in.) Usable: 146 U.S. Gal. (550 lit.) *See NOTE 1 for unusable fuel.*
Oil Capacity Engines.	2 U.S. Gal. (7.7 lit.) each engine, at sta 3053 mm (120 in). *See NOTE 1 for undrainable oil.*
Oil Capacity Transmission.	3.2 U.S. Gal. (12 lit.) at sta 3460 mm (136 in) *See NOTE 1 for undrainable oil.*
Maximum Operating Altitude.	2,432 m. (8,000 ft.) *See NOTE 7.*
Rotor Blade and Control Movements.	For rigging information refer to the Model A109A/A109AII/A109C Maintenance Manual.

III. Model A109A II (Normal Category Helicopter), approved December 4, 1981.

Engines.	Two (2) Detroit Diesel Allison Division of General Motors Corporation Model 250-C20B or 250-C20R/1 turboshaft engines. Bendix gas producer fuel control DP-N2. Bendix power turbine governor AL-AA1.
Fuel.	For all temperatures: MIL-T-5624 grade JP-4 ASTM D-1655 Jet B For temperatures above -18ºC (0ºF): MIL-T-5624 grade JP-5 ASTM D-1655 Jet A ASTM D-1655 Jet A1 *See NOTE 4*

III. Model A109A II (Normal Category Helicopter) (cont'd)

Engine Limits.

All Engine Operation

Takeoff (5 minutes)

Torque	97% (323 lb.ft) (370 shp) (-C20R/1 engine)
Torque	121% (323 lb.ft) (370 shp) (-C20B engine)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)

Maximum continuous

Torque	97% (323 lb.ft) (370 shp) (-C20R/1 engine)
Torque	121% (323 lb.ft) (370 shp) (-C20B engine)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	738ºC (1360 ºF) (-C20B engine)
Gas temperature	752ºC (1358ºF) (-C20R/1 engine)

Single-engine operation (emergency)

Torque	118% (400 lb.ft) (450 shp) (-C20R/1 engine)
Torque	137% (350 lb.ft) (420 shp) (-C20B engine)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)

(See the A109AII Helicopter Flight Manual for rpm and temperature transient limits).

Rotor Limits.

Power off

Maximum	110%	(424 rpm)
Minimum	90%	(346 rpm)

Power on

Maximum	100%	(385 rpm)
Minimum	95%	(365 rpm)

Rotor Speed Warning.

Low speed	95%	(365 rpm)
High speed	105%	(404 rpm)

Airspeed Limits.

Never exceed speed (V_{NE}) 168 knots IAS

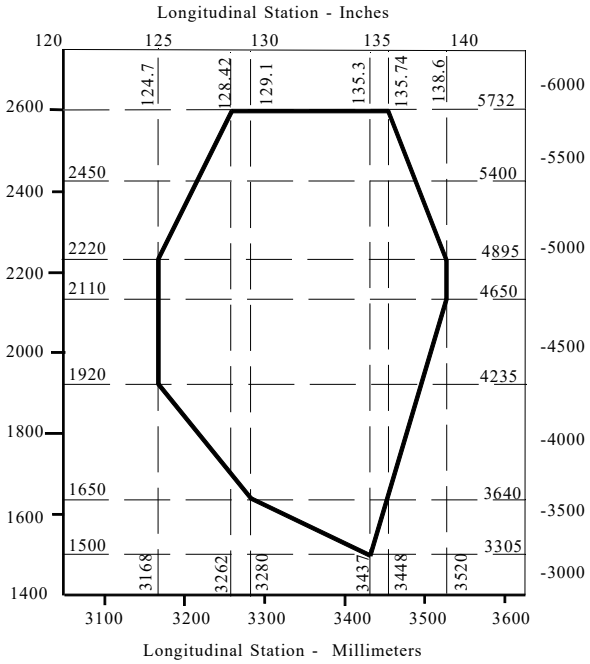
For reduction of V_{NE} with altitude and OAT, see the A109AII Helicopter Flight Manual.

Maximum Gear Operating Speed (V_{LO})	120 kts	IAS
Maximum Gear Extended Speed (V_{LE})	120 kts	IAS
Maximum Forward Touchdown Speed	40 kts	IAS

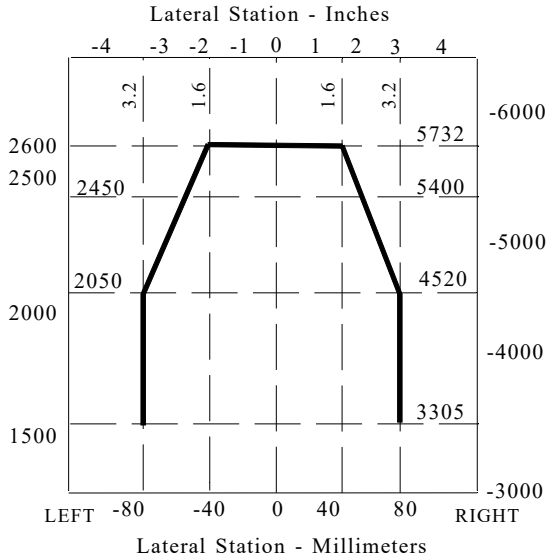
III. Model A109A II (Normal Category Helicopter) (cont'd)

CG Range (Gear Down). Longitudinal Limits

Gear retraction moment is 4 kgm (347 lb.in.) moving CG forward)



CG Range (Gear Down). Lateral Limits



Empty Weight & CG Range (None)

Maximum Weight. 2600 kg (5732 lb.)

Minimum Crew. One pilot at Sta. 1565 mm (62 in.) to 1630 mm (64 in.)

III. Model A109A II (Normal Category Helicopter) (cont'd)

Maximum Passengers.	7: For aircraft conforming with Agusta Report 109-06-29. 1 at sta. 1565 mm (62 in) to 1630 mm (64 in) 3 at sta. 2420 mm (95 in) Facing FWD or 3 at sta 2455 (97 in) Facing AFT 3 at sta. 3200 mm (126 in) 0: For aircraft in "green" delivery configuration conforming with Agusta Report 109-06-07. See Appendix 15 of required flight manual.
Maximum Baggage.	150 kg. (330 lb.) at sta 4920 mm (194 in) Maximum floor loading for baggage compartment: 500 kg/m2 (102 lb/ft2) Maximum load per tie-down fitting: 91 kg (200 lb.)
Fuel Capacity.	Total: 148.4 U.S. Gal. (559 lit.) in two tanks of 74.2 U.S. Gal. (279.5 lit.) each, at sta 3652 mm (144.0 in.) Usable: 146 U.S. Gal. (550 lit.) *See NOTE 1 for unusable fuel* *See NOTE 9 for fuel capacity with auxiliary fuel tank installation.*
Oil Capacity Engines.	2 U.S. Gal. (7.7 lit.) each engine, at sta 3053 mm (120 in) *See NOTE 1 for undrainable oil.*
Oil Capacity Altitude.	3.2 U.S. Gal. (12 lit.) at sta 3460 mm (136 in) *See NOTE 1 for undrainable oil.*
Maximum Operating Altitude.	4,560 m. (15,000 ft.)
Rotor Blade Control Movements.	For rigging information refer to the Model A109A/A109AII/A109C Maintenance Manual.

IV. Model A109C (Normal Category Helicopter), approved August 10, 1989.

Engines.	Two (2) Detroit Diesel Allison Division of General Motors Corporation Model 250-C20R/1 turboshaft engines. Bendix gas producer fuel control DP-N2. Bendix power turbine governor AL-AA1.
Fuel.	For all temperatures: MIL-T-5624 grade JP-4 ASTM D-1655 Jet B For temperature above -18ºC (0ºF): MIL-T-5624 grade JP-5 ASTM D-1655 Jet A ASTM D-1655 Jet A1 See NOTE 4

IV. Model A109C (Normal Category Helicopter) (cont'd)

Engine Limits.

All Engine Operation

Takeoff (5 minutes)

Torque	104% (345 lb.ft) (395 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)

Maximum Continuous

Torque	100% (332 lb.ft) (380 shp)
Output shaft speed (N2)	95-100% (5715-6016 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	752ºC (1385ºF)

Single-engine operation (emergency)

Torque	118% (400 lb.ft) (450 shp)
Output shaft speed (N2)	95-100% (5715-6015 rpm)
Gas producer speed (N1)	105% (53518 rpm)
Gas temperature	810ºC (1490ºF)

(See the A109C Helicopter Flight Manual for rpm and temperature transient limits).

Rotor Limits.

Power off

Maximum	110%	(424 rpm)
Minimum	90%	(346 rpm)

Power on

Maximum	100%	(385 rpm)
Minimum	95%	(365 rpm)

Rotor Speed Limits.

Low speed	95%	(365 rpm)
High speed	105%	(404 rpm)

Airspeed Limits.

Never exceed speed (V_{NE}) 168 knots IAS

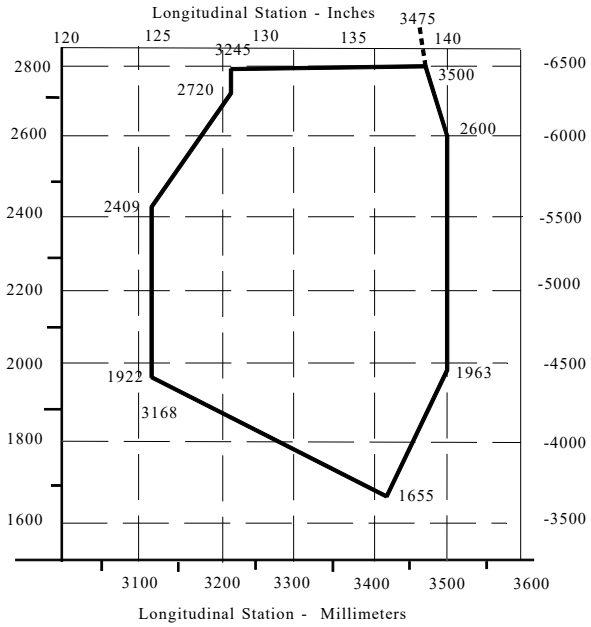
For reduction of V_{NE} with altitude and OAT, see the A109C Helicopter Flight Manual.

Maximum Gear Operating Speed (V_{LO})	120 kts	IAS
Maximum Gear Extended Speed (V_{LE})	120 kts	IAS
Maximum Forward Touchdown Speed	40 kts	IAS

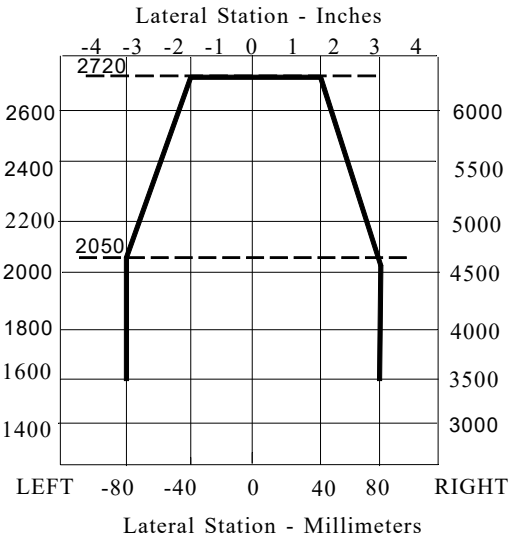
IV. Model A109C (Normal Category Helicopter) (cont'd)

CG Range (Gear Down). Longitudinal Limits

Gear retraction moment is 4 kgm (347 lb. in.) moving CG forward



CG Range (Gear Down). Lateral Limits



Empty Weight & CG Range. (None)

Maximum Weight. 2720 Kg (5997 lb)

Minimum Crew. One pilot at Sta. 1565 mm (62 in.) to 1630 mm (64 in.)

IV. Model A109C (Normal Category Helicopter) (cont'd)

Maximum Passengers.

7: For aircraft conforming with Agusta Report 109-06-67
1 at Sta. 1565 mm (62 in) to 1630 mm (64 in)
See NOTE 5.
3 at Sta. 2420 mm (95 in) Facing FWD or 3 at Sta 2455 (97 in) Facing AFT
3 at Sta. 3200 mm (126 in)

0: For aircraft in "green" delivery configuration conforming with Agusta Report 109-06-07. See Appendix 15 of required flight manual.

Maximum Baggage.

150 kg. (330 lb.) at Sta 4920 mm (194 in)

Maximum floor loading for baggage compartment:
500 kg/m2 (102 lb/ft2)

Maximum load per tie-down fitting:
91 kg (200 lb.)

Fuel Capacity.

Total: 148.4 U.S. Gal. (559 lit.) in two tanks of 74.2 U.S. Gal. (279.5 lit.) each, at sta 3652 mm (144.0 in.)

Usable: 146 U.S. Gal (550 lit.)
See NOTE 1 for unusable fuel.
See NOTE 9 for fuel capacity with auxiliary fuel tank installation.

Oil Capacity Engines.

2 U.S. Gal. (7.7 lit.) each engine, at sta 3053 mm (120 in)
See NOTE 1 for undrainable oil.

Oil Capacity Transmission.

3.2 U.S. Gal. (12 lit.) at sta 3460 mm (136 in)
See NOTE 1 for undrainable oil.

Maximum Operating Altitude.

4,560 m. (15,000 ft.)

Rotor Blade Control Movements.

For rigging information refer to the Model A109A/A109AII/A109C Maintenance Manual.

V. Model A109K2 (Normal Category Helicopter), approved January 15, 1993.

Engines.

Two (2) Turbomeca Model Arriel 1K1 turboshaft engines.

Turbomeca Fuel Control Unit 0164348390.

Fuel.

For all temperatures:
MIL-T-5624 grade JP-4, JP-5,
ASTM D-1655 Jet A, A1, Jet B,
MIL-T-83133 grade JP-8,
AIR 3404-F43 (AVCAT)

For detailed information see Section 1 of the A109K2 Flight Manual FAA approved.

Engine/Xmsn Limits.

All Engine Operation

Takeoff	
Torque	100% (900 SHP at N2 100%)
Output shaft speed (N2)	100% (6,000 rpm)
Gas producer speed (N1) (5 min.)	102% (52,836 rpm)
Gas temperature (5 min.) TOT	845ºC (1,553ºF)

V. Model A109K2 (Normal Category Helicopter) (cont'd)

Engine Limits (cont'd)

Maximum Continuous

Torque	100% (900 SHP at N2 100%)
Output shaft speed (N2)	100% (6,000 rpm)
Gas producer speed (N1)	98.2% (50,868 rpm)
Gas temperature	775ºC (1,427ºF)

Single-engine operation (emergency)

(2½ min.)	
Torque:	71.1% (640 SHP at N2 100%)
Output Shaft Speed (N2)	100% (6000 rpm)
Gas Producer Speed (N1)	103.1% (53406 rpm)
Gas Temperature (TOT)	885ºC (1625ºF)
(30 min.)	
Gas Temperature (TOT)	845ºC (1553ºF)
Gas Producer Speed (N1)	102% (52,836 rpm)

Maximum Continuous

Torque	62.2 (560 SHP at N2 100%)
Output Shaft Speed (N2)	100% (6000 rpm)
Gas Temperature	775ºC (1,427ºF)

(See the A109K2 Helicopter Flight Manual for rpm and temperature transient limits).

Rotor Limits.

Power off

Maximum	110% (422 rpm)
Minimum	90% (346 rpm)

Power on

Maximum	100% (384 rpm)
Minimum	97% (372 rpm)

Rotor Speed Warning.

Low speed	95% (365 rpm)
High speed	105% (403 rpm)

Airspeed Limits.

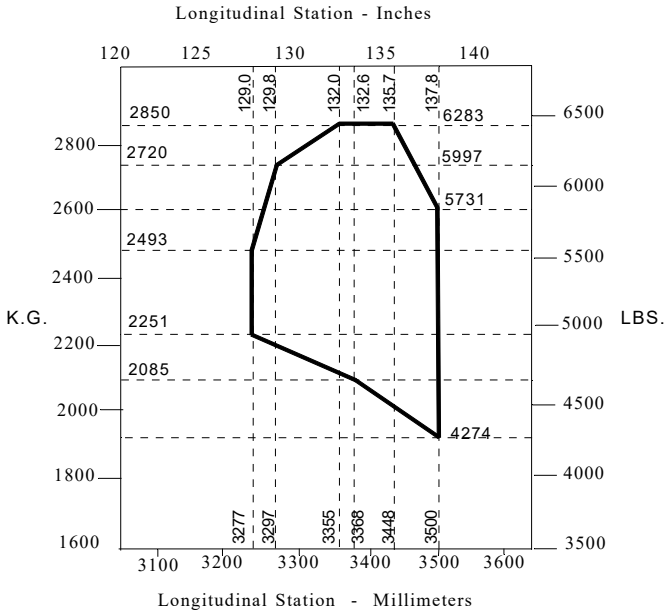
Never exceed speed (Vne) 152 knots IAS

For reduction of Vne with altitude and OAT, see the A109K2 Helicopter Flight Manual.

Maximum Forward Touchdown Speed	40 Kts IAS	to	2720 Kg
	30 Kts IAS	over	2720 Kg

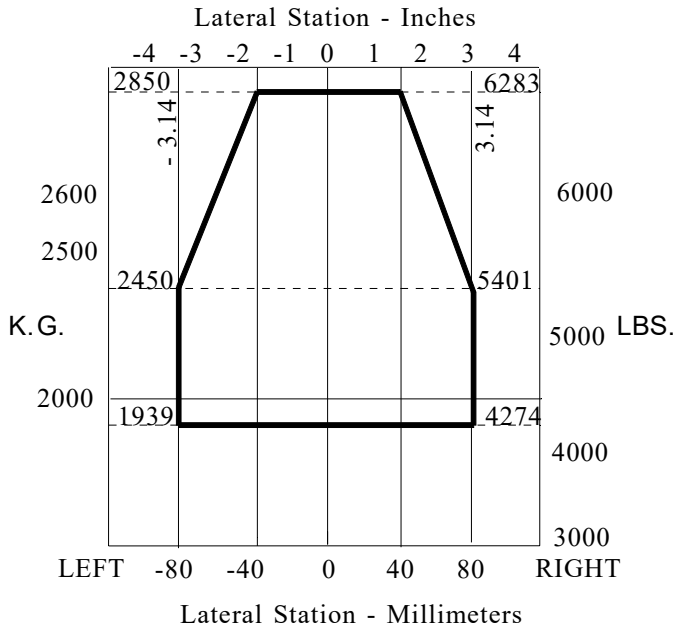
CG Range.

Longitudinal Limits



V. Model A109K2 (Normal Category Helicopter) (cont'd)

CG Range. (Cont'd) Lateral Limits



Empty Weight & CG Range. (None)

Maximum Weight. 2,850 Kg (6,283 lb)

Minimum Crew. One pilot at Sta 1,565 mm (62 in) to 1,630 mm (64 in)

Maximum Passengers. 7

Maximum Baggage. 150 Kg (330 lb) at Sta 4,920 mm (194 in)

Maximum floor loading for baggage compartment:
500 Kg/m^2 (102 lb/ft2)
Maximum load per tie-down fitting:
91 Kg (200 lb)

Fuel Capacity. Total Usable: 123.6 US Gal (468 lt) at Sta 3,824 mm (150.56 in)
See NOTE 1 for unusable fuel.
See NOTE 8 for fuel capacity with auxiliary fuel tank installation.

Oil Capacity Engines. 2 US Gal (7.7 lt) each engine, at Sta 3,311 mm (130 in)
See NOTE 1 for undrainable oil.

Oil Capacity Transmission. 3.2 US Gal (12 lt) at sta 3,441 mm (135 in)
See NOTE 1 for undrainable oil.

Maximum Operating Altitude. 4,560 m (15,000 ft)

Rotor Blade Control Movements For rigging information refer to the Model A109K2 Maintenance Manual.

VI. Model A109E (Normal Category Helicopter), approved August 26, 1996.

Engines.	Two (2) Pratt & Whitney Canada Inc. PW206C turboshaft engines. FADEC control engines Two (2) Turbomeca Arrius 2K1: TM 2K1 turboshaft engines. FADEC control engines P/N 70 EMK 00520	
Fuel PW 206C.	For all temperatures: ASTM D-1655 Jet A, A1, A2 Jet B.	
Fuel TM 2K1.	ASTM D-1655 Jet A, A1 Military specification (only for reference) MIL-T-5624 grade JP-4, JP-5, MIL-T-83133 grade JP-8, For detailed information see Section I of the applicable FAA approved A109E Flight Manual.	
Engine/Xmsn Limits. (PW206C engine)	All Engine Operation Takeoff	
	Torque	122% (549 SHP at N2 100%)
	Output shaft speed (N2)	102% (6120 rpm)
	Gas producer speed (N1)	98.7% (57250 rpm)
	Gas temperature (5 min.) TOT	863ºC (1585.4ºF)
	Maximum Continuous	
	Torque	122% (549 SHP at N2 100%)
	Output shaft speed (N2)	100% (6060 rpm)
	Gas producer speed (N1)	97.4% (56500 rpm)
	Gas temperature	820ºC (1508ºF)
	Single-engine operation (emergency) 2½ min.	
	Torque	142% (640 SHP at N2 100%)
	Output Shaft Speed (N2)	102% (6120 rpm)
	Gas Producer Speed (N1)	102.4% (59400 rpm)
	Gas Temperature (TOT)	930ºC (1706ºF)
	Maximum Continuous	
	Torque	138% (622 SHP at N2 100%)
	Output shaft speed (N2)	100% (6060 rpm)
	Gas producer speed (N1)	100.4% (58250 rpm)
	Gas temperature	885ºC (1625ºF)
	A109E helicopters that entered service prior to January 29, 1998 have a torque meter scale defined in Appendix 13 of the Rotorcraft Flight Manual.	
(TM 2K1 engine)	All Engine Operation Takeoff	
	Torque	142% (640 SHP at N2 100%)
	Output shaft speed (N2)	102% (6120 rpm)
	Gas producer (ΔN1)	0%
	Gas producer speed (N1)	54706 rpm)
	Gas temperature (5 min.)	TOT905ºC (1661.4ºF)
	Maximum Continuous	
	Torque	127% (573 SHP at N2 100%)
	Output shaft speed (N2)	100% (6060 rpm)
	Gas producer (ΔN1)	-2.4%
	Gas producer speed (N1)	53406 rpm
	Gas temperature	866ºC (1521ºF)

VI. Model A109E (Normal Category Helicopter) (cont'd)

Engine/Xmsn Limits. (cont'd)

	Single-engine operation (emergency)	
	2½ min.	
	Torque	155% (700 SHP at N2 100%)
	Output shaft speed (N2)	102% (6120 rpm)
	Gas producer (ΔN1)	+2.6%
	Gas producer speed (N1)	56113 rpm
	Gas temperature	957ºC (1521ºF)
	Maximum Continuous	
	Torque	142% (640 SHP at N2 100%)
	Output shaft speed (N2)	100% (6060 rpm)
	Gas producer (ΔN1)	0%
	Gas producer speed (N1)	54706 rpm
	Gas temperature	905ºC (1521ºF)

Transmission Limits.

	All Engine Operation (torque Tq)	
	Maximum Continuous	100% (450 SHP)
	Transient (6 second)	110% (495 SHP)
	Single Engine Operation (torque Tq)	
	Maximum Continuous	124% (558 SHP)
	2 ½ minute	142% (640 SHP)
	Transient (6 seconds)	156% (702 SHP)

Rotor Limits.

	Power off	
	Maximum	110% (422 rpm)
	Minimum	90% (346 rpm)
	Power on all engine operative	
	Maximum	102% (394 rpm)
	Minimum	99% (380 rpm)
	Power on single engine (OEI)	
	Maximum	102% (394 rpm)
	Minimum	90% (346 rpm)

Rotor Speed Warning.

	Low speed	
	Power On - Maximum	95.5% (367 rpm)
	Power Off - Minimum	89.5% (344 rpm)
	High speed	105.5% (405 rpm)

Airspeed Limits.

	Never exceed speed (Vne)	168 knots IAS power on 128 knots IAS power off/OEI

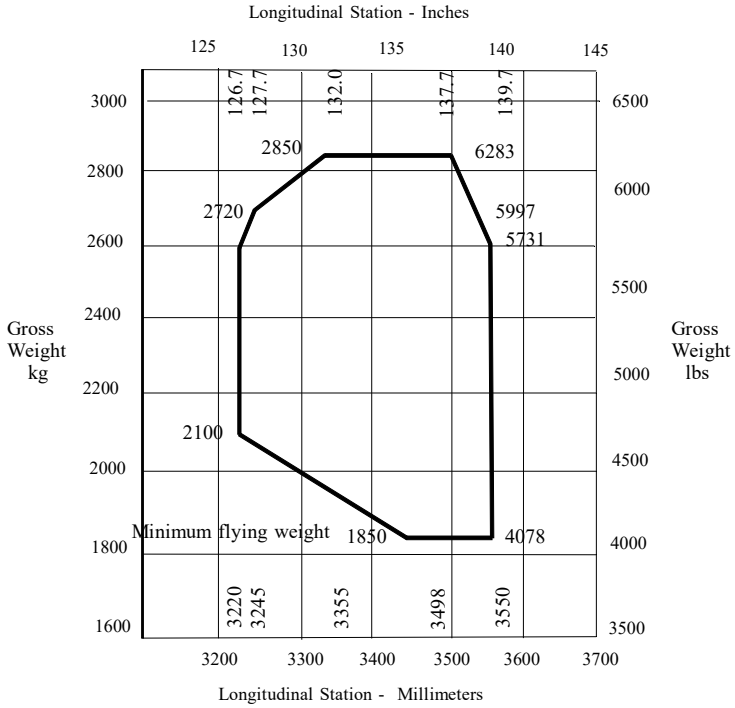
For reduction of Vne with altitude and OAT, see the applicable FAA approved A109E Helicopter Flight Manual.

Maximum Forward Touchdown Speed	40 Kts IAS

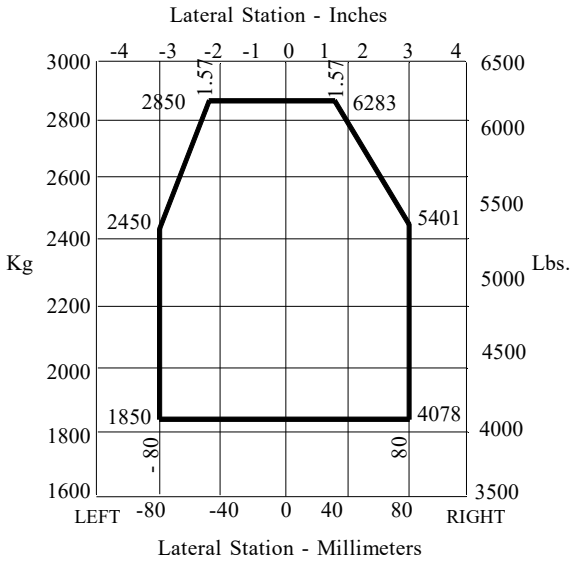
VI. Model A109E (Normal Category Helicopter) (cont'd)

C.G. Range

Longitudinal limits



Lateral limits



VI. Model A109E (Normal Category Helicopter) (cont'd)

Empty Weight & CG Range.	(None)
Maximum Weight.	2,850 Kg (6,283 lb)
Minimum Crew.	One pilot at Sta 1,565 mm (62 in) to 1,630 mm (64 in)
Maximum Passengers.	7
Maximum Baggage.	150 Kg (330 lb) at Sta 5,300 mm (209 in) Maximum floor loading for baggage compartment: 500 Kg/m^2 (102 lb/ft2) Maximum load per tie-down fitting: 91 Kg (200 lb)
Fuel Capacity.	Total Usable: 157 US Gal (595 lt) *See NOTE 1 for unusable fuel.*
Oil Capacity Engines. PW 206C	1.35 US Gal (5.12 lt) each engine *See NOTE 1 for undrainable oil.*
Oil Capacity Engines. TM 2K1	1.13 US Gal (4.3 lt) each engine *See NOTE 1 for undrainable oil.*
Oil Capacity Transmission.	2.9 US Gal (11 lt) *See NOTE 1 for undrainable oil.*
Maximum Operating Altitude.	PW 206C 15,000 ft (4,560 m) TM 2K1 20,000 ft (6,096 m)
Rotor Blade Control Movements	For rigging information refer to the Model A109E Maintenance Manual.

VII. Model A119 (Normal Category Helicopter), approved April 28, 2000.

Engine.	One (1) Pratt & Whitney Canada Inc. PT6B-37A Turboshaft engine Build Specification No. 1017 (for helicopters not equipped with Integrated Display System) or Build Specification No. 1142 (for helicopters equipped with Integrated Display System) Electronic Engine Control (EEC)
Fuel.	For all temperatures: ASTM D-1655 Jet A, Jet A-1~~, Jet A-2~~ Military specification (only for reference): MIL-T-5624 grade JP-5, MIL-T-83133 grade JP-8 For detailed information: see Section 1 of the A119 Flight Manual - FAA approved

Engine/Xmsn Limits.

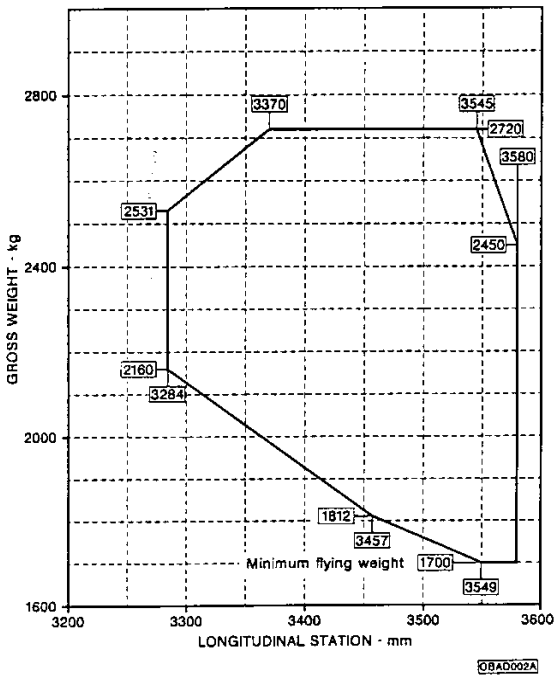
Takeoff		
Torque	108.5%	(900 SHP at N2 100%)
Output Shaft Speed (N2)	101%	(4416 rpm)
Gas Producer Speed (N1)	103.2%	(39300 rpm)
Gas Temperature 5 min. (ITT)	810°C	(1490.4 °F)
Maximum Continuous		
Torque	100%	(830 SHP at N2 102%)
Output Shaft Speed (N2)	101%	(4416 rpm)
Gas Producer Speed (N1)	100.1%	(38100 rpm)
Gas Temperature (ITT)	755°C	(1391 °F)

VII. Model A119 (Normal Category Helicopter) (cont'd)

Rotor Limits.	Power off		
	Maximum	110%	(422 rpm)
	Minimum	90%	(346 rpm)
	Power on		
	Maximum	101%	(388 rpm)
		103%	(396 rpm) with torque <50%
	Minimum	95%	(365 rpm)
Rotor Speed Warning.	Low speed	96%	(369 rpm)
	High speed	108%	(415 rpm)
Airspeed Limits.	Never exceed speed (Vne)	152 knots IAS power on	

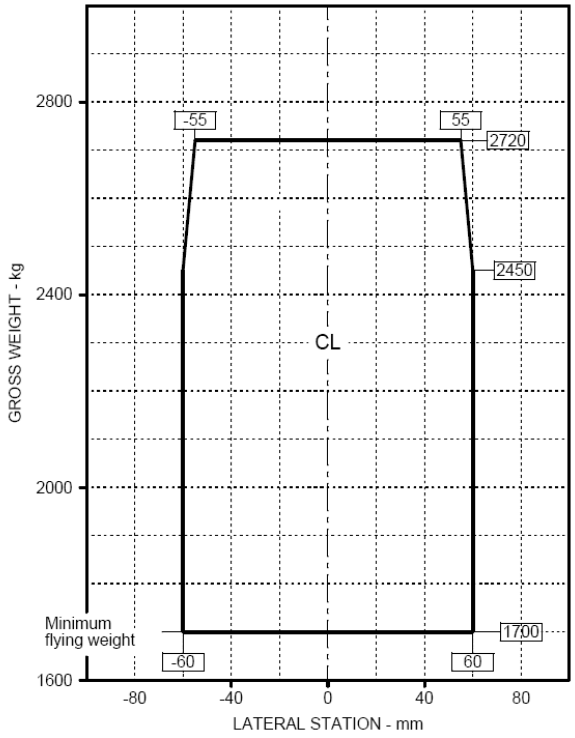
For reduction of the Vne with altitude and OAT, see the A119 Rotorcraft Flight Manual.

C.G. Range. Longitudinal Limits.



VII. Model A119 (Normal Category Helicopter) Cont'd

CG Range. Lateral Limits



Empty Weight & CG Range. (None)

Maximum Weight. 2,720 Kg (5,997 lb)

Minimum Crew. One pilot between STA 1,565 mm (62 in) and STA 1,630 mm (64 in)

Maximum Passengers. 7

Maximum Baggage. 150 Kg (330 lb) between STA 4,880 (192 in) and STA 6,430 mm (253 in)
Maximum floor loading for baggage compartment: 500 Kg/m^2 (102 lb/ft^2).

Fuel Capacity. Total Usable: 157 US Gal (595 lt)
See NOTE 1 for unusable fuel
See NOTE 8 for fuel capacity with supplementary fuel tank installation.

Oil Capacity Engine. 2.76 US Gal (10.45 lt)
See NOTE 1 for undrainable oil.

Oil Capacity Transmission. 2.72 US Gal (10.3 lt)
See NOTE 1 for undrainable oil.

Maximum Operating Altitude. 4,572 m (15,000 ft)

Rotor Blade Control Movements. For rigging information refer to the Model A119 Maintenance Manual.

VIII. Model A109S (Normal Category Helicopter), approved July 20, 2006.

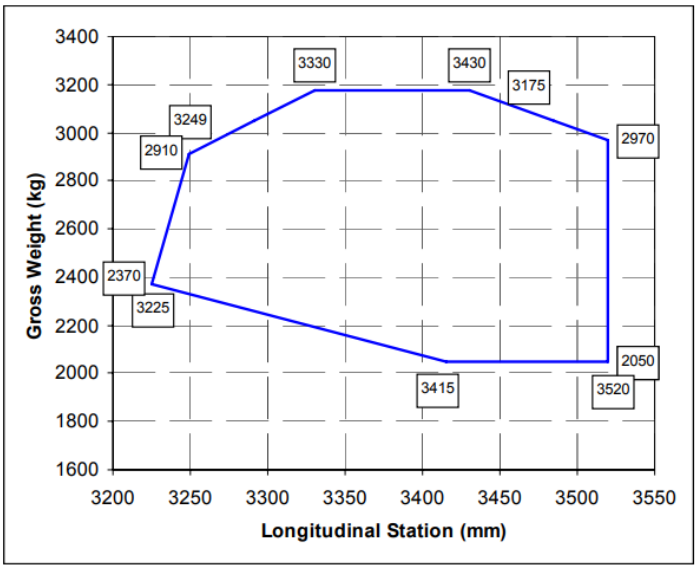
Engines.	Two (2) Pratt & Whitney Canada Inc. PW207C turboshaft engines. FADEC control engines	
Fuel PW 207C.	For all temperatures: ASTM D-1655 Jet A, A1 Military specification (only for reference) MIL-T-5624 grade , JP-5, MIL-T-83133 grade JP-8, For detailed information see Section I of the applicable FAA approved A109S / A109S Trekker Rotorcraft Flight Manual.	
Emergency Fuel	Refer to FAA approved RFM Section 1, for detailed information	
Engine/Xmsn Limits. PW207C engine)	All Engine Operation Takeoff	
	Torque	125% (562 SHP at N2 100%)
	Output shaft speed (N2)	102% (6120 rpm)
	Gas producer speed (N1)	99.7% (57826 rpm)
	Gas temperature (5 min.) TOT	900ºC (1652ºF)
	Maximum Continuous	
	Torque	125% (562 SHP at N2 100%)
	Output shaft speed (N2)	101% (6060 rpm)
	Gas producer speed (N1)	97.1% (56318 rpm)
	Gas temperature (TOT)	840ºC (1544ºF)
	Single-engine operation (emergency)	
	2½ min	
	Torque	162% (730 SHP at N2 100%)
	Output Shaft Speed (N2)	102% (6120 rpm)
	Gas Producer Speed (N1)	103% (59740 rpm)
	Gas Temperature (TOT)	970ºC (1778ºF)
	Maximum Continuous	
	Torque	141% (633 SHP at N2 100%)
	Output shaft speed (N2)	101% (6060 rpm)
	Gas producer speed (N1)	99.7% (57826 rpm)
	Gas temperature (TOT)	900ºC (1652ºF)
Transmission Limits.		
	All Engine Operation (torque Tq)	
	Maximum Continuous	100% (900 SHP)
	Take off (5 minutes)	107% (960 SHP)
	Transient (6 second)	110% (990 SHP)
	Single Engine Operation (torque Tq)	
	Maximum Continuous	133% (600 SHP)
	2 ½ minute	162% (730 SHP)
	Transient (6 seconds)	173% (780 SHP)
Rotor Limits.	Power off	
	Maximum	110% (422 rpm)
	Minimum	95% (365 rpm)
	Power on all engine operative	
	Maximum	102% (394 pm)
	Minimum	99% (380 rpm)
	Power on single engine (OEI)	
	Maximum	102% (394 rpm)
	Minimum	90% (346 rpm)

VIII. Model A109S (Normal Category Helicopter) (cont'd)

Rotor Speed Warning.	Low speed	
	Power On – Maximum	95.5% (367 rpm)
	Power Off – Minimum	94.5% (344 rpm)
	High speed	
	Power On	105.5% (405 rpm)
	Power Off	111% (428 rpm)
A109S Airspeed Limits.	Never exceed speed (Vne)	168 knots IAS power on 128 knots IAS power off/OEI
	For reduction of Vne with altitude and OAT, see the applicable FAA approved A109S Rotorcraft Flight Manual.	
	Refer to FAA approved RFM Section 1, for detailed information on other VNE limits and other speed limitations	
A109S Trekker Airspeed Limits.	Never exceed speed (Vne)	160 knots IAS power on 120 knots IAS power off/OEI
	For reduction of Vne with altitude and OAT, see the applicable FAA approved A109S Trekker Rotorcraft Flight Manual. Refer to FAA approved RFM Section 1, for detailed information on other VNE limits and other speed limitations	

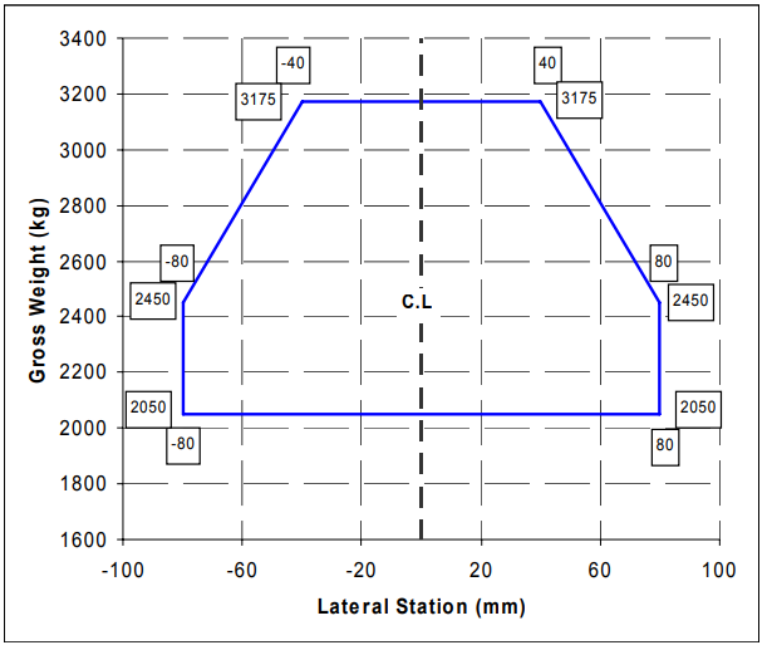
C.G. Range

A109S Longitudinal limits (mm)

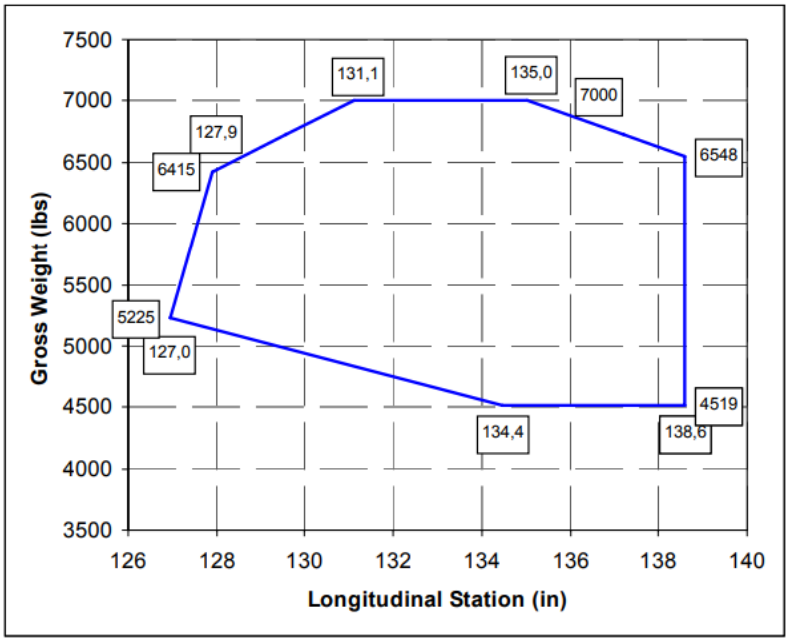


VIII. Model A109S (Normal Category Helicopter) (cont'd)

A109S Lateral (mm)

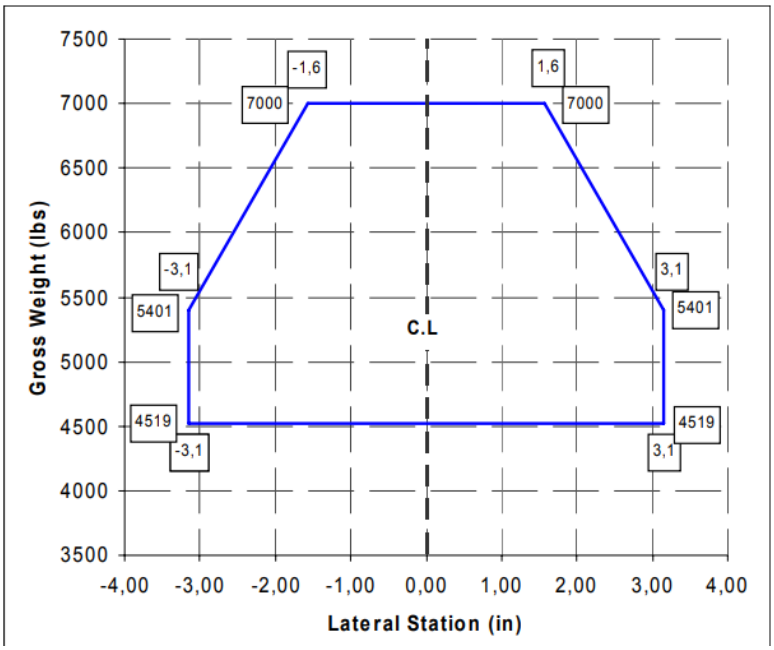


A109S Longitudinal limits (inch)

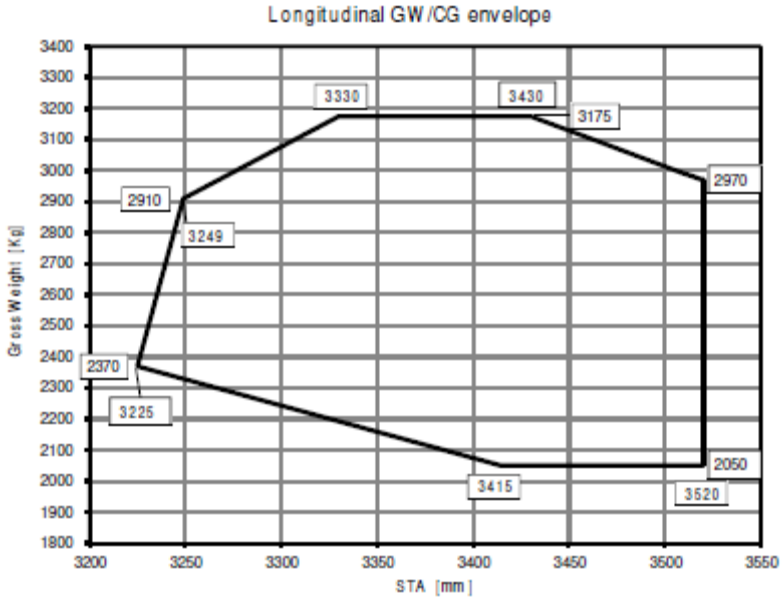


VIII. Model A109S (Normal Category Helicopter) (cont'd)

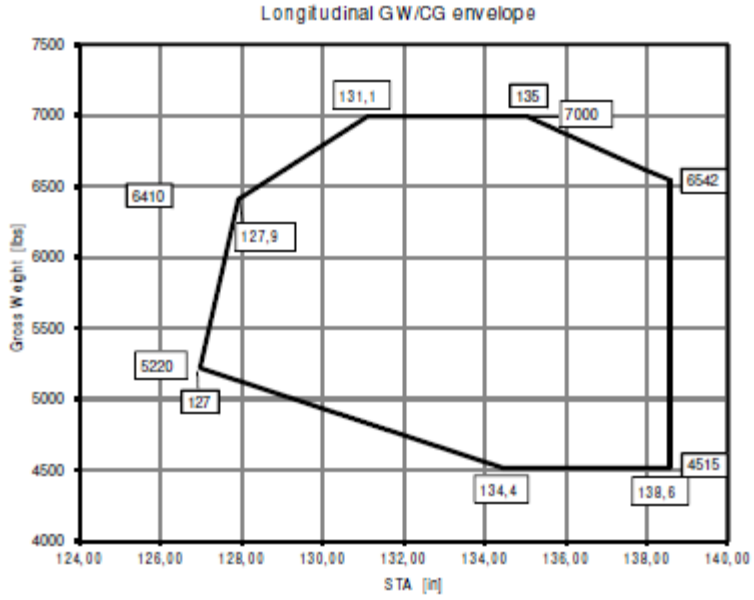
A109S Lateral (inch)



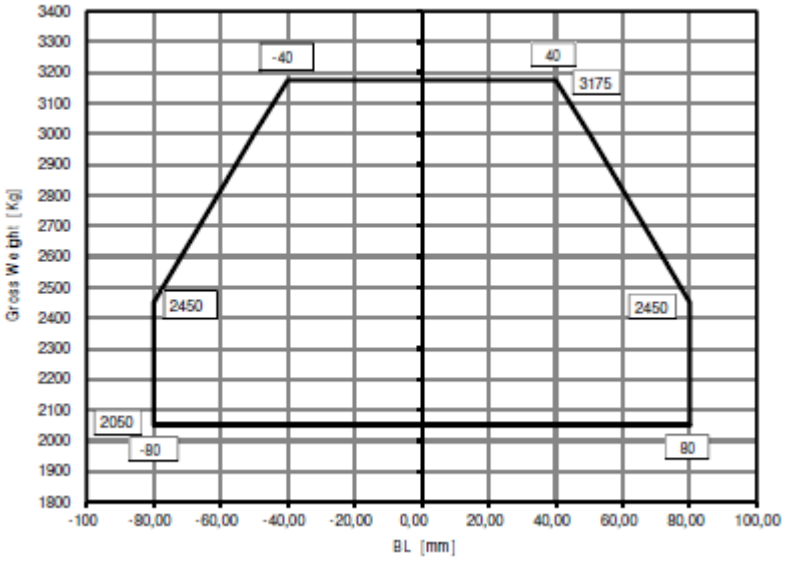
A109S with Trekker Kit P/N 109G0000F01 Longitudinal (mm)



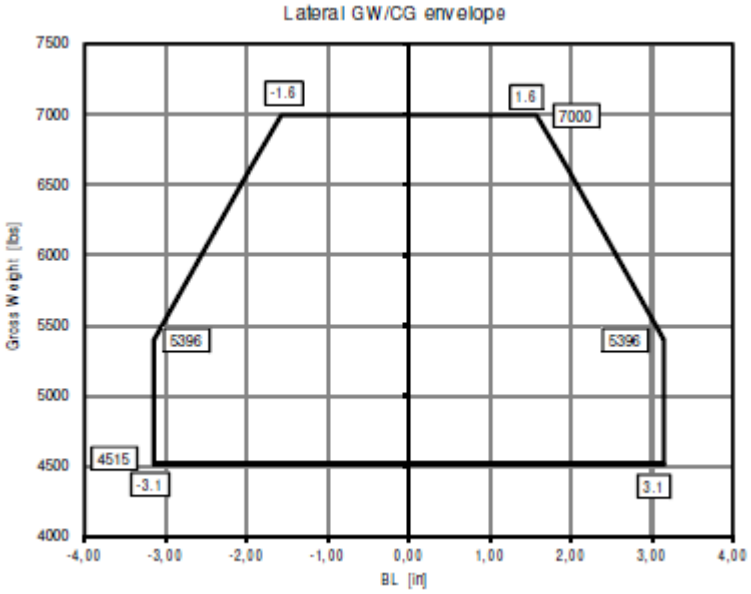
A109S with Trekker Kit P/N 109G0000F01 Longitudinal (in)



A109S with Trekker Kit P/N 109G0000F01 Lateral (mm)



A109S with Trekker Kit P/N 109G0000F01 Lateral (in)



Empty Weight & CG Range.	(None)
Maximum Take Off Weight.	3,175 Kg (7,000 lb)
Minimum Crew.	One pilot at Sta 1,328 mm (52,3 in) to 1,404 mm (55,3 in) The pilot must be seated in the right seat
Maximum Passengers.	7
Maximum Baggage.	120 Kg (264 lb) at Sta 4,880 mm to 6430 mm ref.RFM for baggage load distribution Maximum floor loading for baggage compartment: 500 Kg/m^2 (102 b/ft2) Maximum load per tie-down fitting: 91 Kg (200 lb)
Fuel Capacity.	Total Usable: 148.5 US Gal (562 lt) *See NOTE 1 for unusable fuel.*
Oil Capacity Engines. PW 207C	1.38 US Gal (5.25 lt) for each engine *See NOTE 1 for undrainable oil.*
Oil Capacity Transmission.	3,09 US Gal (11,7 lt) *See NOTE 1 for undrainable oil.*
Maximum Operating Altitude. PW 207C	20,000 ft (6,096 m)
Blade Control Movements	Main -1° / +12° Tail RH pedal –7° LH pedal + 24° For rigging information refer to the Maintenance Manual

IX. Model AW119 MKII (Normal Category Helicopter), approved October 22, 2007.

Engine. One (1) Pratt & Whitney Canada Inc. PT6B-37A Turboshaft engine Build Specification No. 1242 Electronic Engine Control (EEC)

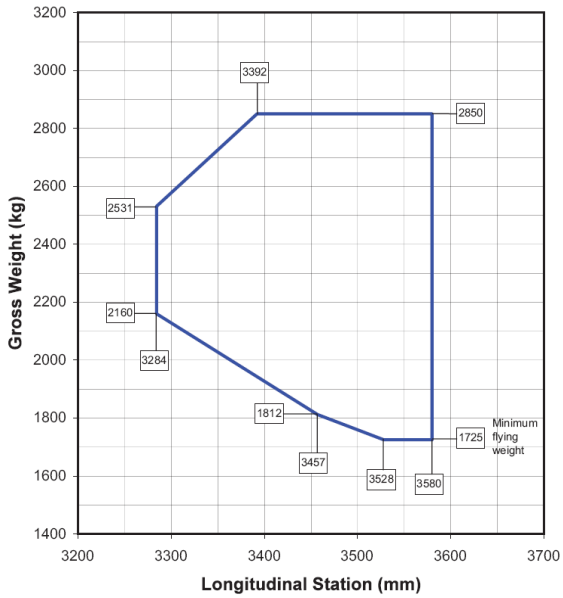
Fuel. For all temperatures:
ASTM D-1655 Jet A, Jet A-1
Military specification (only for reference):
MIL-T-5624 grade JP-5,
MIL-T-83133 grade JP-8
For detailed information: see Section 1 of the AW119 MKII RFM - FAA approved

Engine/Xmsn Limits.	Takeoff (5 min)		
	Torque	108.5%	(917 SHP at N2 102%)
	Output Shaft Speed (N2)	102%	(4460 rpm)
		Note: Operation up to N2 103% is permitted	
	Gas Producer Speed (N1)	103.2%	(39300 rpm)
	Gas Temperature (ITT)	810°C	(1490.4 °F)
	Maximum Continuous		
	Torque	100%	(847 SHP at N2 102%)
	Output Shaft Speed (N2)	102%	(4460 rpm)
		Note: Operation up to N2 103% is permitted	
	Gas Producer Speed (N1)	100.1%	(38100 rpm)
	Gas Temperature (ITT)	755°C	(1391 °F)
Rotor Limits.	Power off		
	Maximum	110%	(422 rpm)
	Minimum	90%	(346 rpm)
	Power on		
	Maximum	103%	(396 rpm)
	Minimum	95%	(365 rpm)
Rotor Speed Warning.	Low speed	96%	(369 rpm)
	High speed	108%	(415 rpm)
Airspeed Limits.	Never exceed speed (Vne)	152 knots IAS power on	

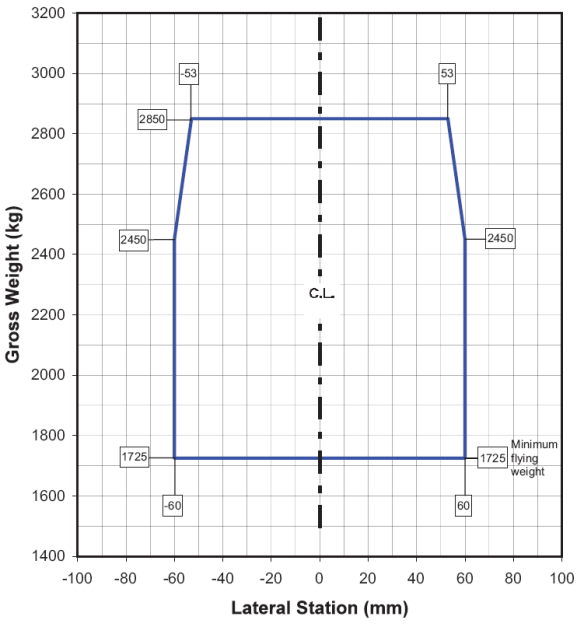
For reduction of the Vne with altitude and OAT, see the AW119 MKII Rotorcraft Flight Manual.

IX. Model AW119 MKII (Normal Category Helicopter) Cont'd

C.G. Range. Longitudinal Limits.



CG Range. Lateral Limits



Empty Weight & CG Range. (None)

Maximum Weight. 2,850 Kg (6283 lb)

Minimum Crew. One pilot between STA 1,565 mm (62 in) and STA 1,630 mm (64 in)

Maximum Passengers. 7

IX. Model AW119 MKII (Normal Category Helicopter) Cont'd

Maximum Baggage.	150 Kg (330 lb) between STA 4,880 (192 in) and STA 6,430 mm (253 in) Maximum floor loading for baggage compartment: 500 Kg/m^2 (102 lb/ft^2).
Fuel Capacity.	Total Usable: 157 US Gal (595 lt) *See NOTE 1 for unusable fuel* *See NOTE 8 for fuel capacity with supplementary fuel tank installation.*
Oil Capacity Engine.	2.76 US Gal (10.45 lt) *See NOTE 1 for undrainable oil.*
Oil Capacity Transmission.	2.72 US Gal (10.3 lt) *See NOTE 1 for undrainable oil.*
Maximum Operating Altitude.	4,572 m (15,000 ft)
Rotor Blade Control Movements.	For rigging information refer to the A119/AW119 MKII Maintenance Manual.

X. Model AW109SP (Normal Category Helicopter), approved October 14, 2010.

Engines.	Two (2) Pratt & Whitney Canada Inc. PW207C turboshaft engines. FADEC control engines
Fuel PW 207C.	For all temperatures: ASTM D-1655 Jet A, A1 Military specification (only for reference) MIL-T-5624 grade , JP-5, MIL-T-83133 grade JP-8, For detailed information see Section I of the applicable FAA approved AW109SP Rotorcraft Flight Manual.
Emergency Fuel	Refer to FAA approved RFM Section 1, for detailed information

Engine/Xmsn Limits.
PW207C engine)

All Engine Operation

Takeoff

Torque	125% (562 SHP at N2 100%)
Output shaft speed (N2)	102% (6120 rpm)
Gas producer speed (N1)	99.7% (57826 rpm)
Gas temperature (5 min.) TOT	900ºC (1652ºF)

Maximum Continuous

Torque	125% (562 SHP at N2 100%)
Output shaft speed (N2)	101% (6060 rpm)
Gas producer speed (N1)	97.1% (56318 rpm)
Gas temperature (TOT)	840ºC (1544ºF)

Single-engine operation (emergency)

2½ min

Torque	162% (730 SHP at N2 100%)
Output Shaft Speed (N2)	102% (6120 rpm)
Gas Producer Speed (N1)	103% (59740 rpm)
Gas Temperature (TOT)	970ºC (1778ºF)

Maximum Continuous

Torque	141% (633 SHP at N2 100%)
Output shaft speed (N2)	101% (6060 rpm)
Gas producer speed (N1)	99.7% (57826 rpm)
Gas temperature (TOT)	900ºC (1652ºF)

X. Model AW109SP (Normal Category Helicopter) (cont'd)

Transmission Limits.

All Engine Operation (torque Tq)

Maximum Continuous	100% (900 SHP)
Take off (5 minutes)	107% (960 SHP)
Transient (6 second)	110% (990 SHP)

Single Engine Operation (torque Tq)

Maximum Continuous	133% (600 SHP)
2 ½ minute	162% (730 SHP)
Transient (6 seconds)	173% (780 SHP)

Rotor Limits.

Power off

Maximum	110% (422 rpm)
Minimum	95% (365 rpm)

Power on all engine operative

Maximum	102% (394 pm)
Minimum	99% (380 rpm)

Power on single engine (OEI)

Maximum	102% (394 rpm)
Minimum	90% (346 rpm)

Rotor Speed Warning.

Low speed

Power On – Maximum	95.5% (367 rpm)
Power Off – Minimum	94.5% (344 rpm)

High speed

Power On	105.5% (405 rpm)
Power Off	111% (428 rpm)

Airspeed Limits.

Never exceed speed (Vne) 168 knots IAS power on
128 knots IAS power off/OEI

For reduction of Vne with altitude and OAT, see the applicable FAA approved AW109SP Rotorcraft Flight Manual.

Refer to FAA approved RFM Section 1 for detailed information on other VNE limits

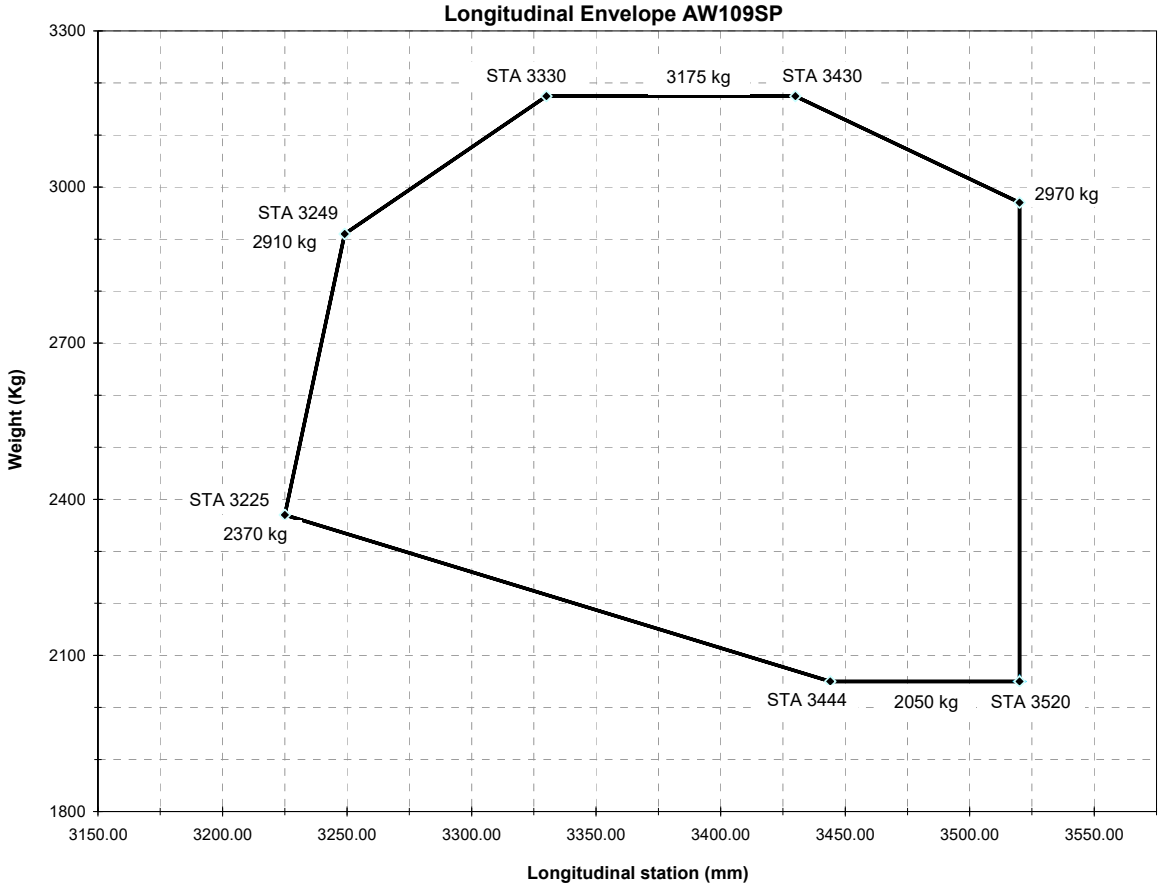
Ground Speed Limits

Maximum take off and Touchdown Speed on concrete or even surfaces: 40 Kts IAS
Maximum take off and Touchdown Speed on unprepared or uneven surfaces: 20 Kts IAS

Refer to FAA approved RFM Section 1 for detailed information

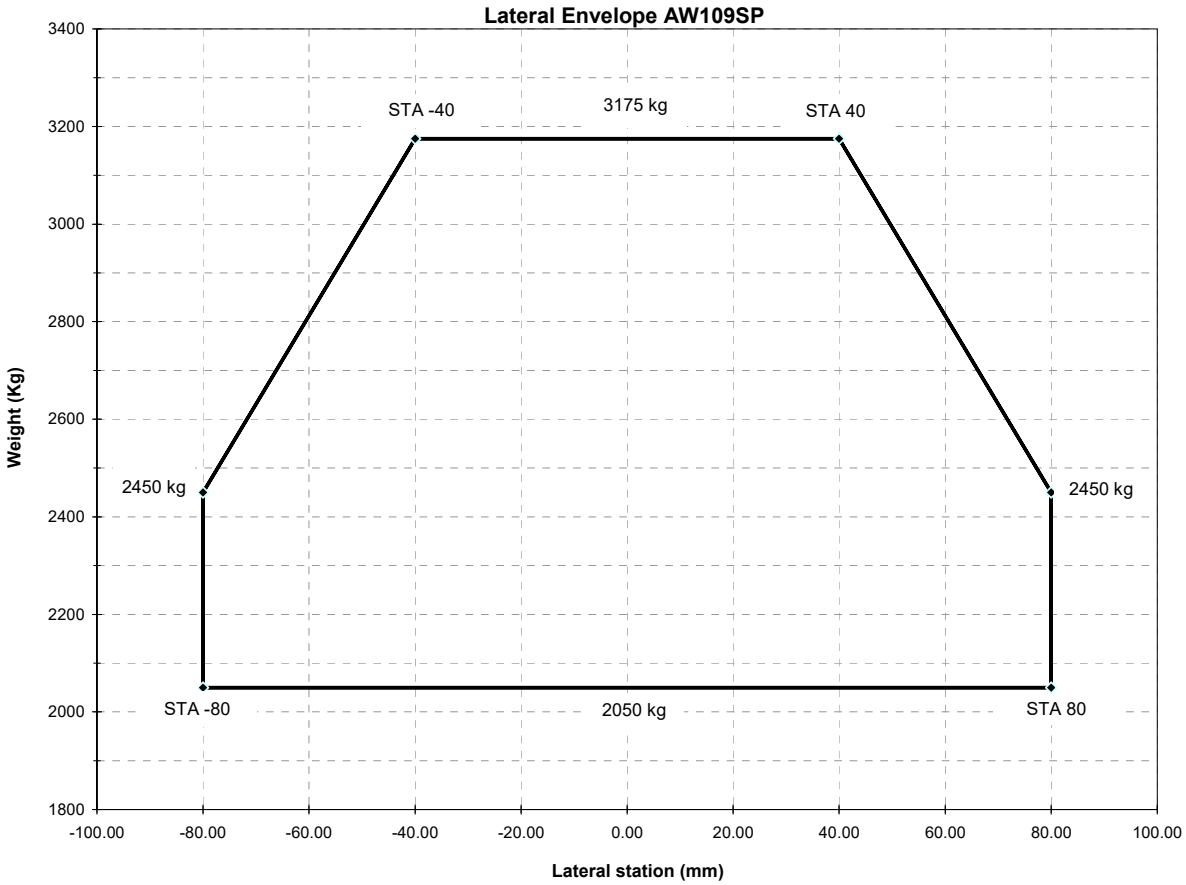
X. Model AW109SP (Normal Category Helicopter) (cont'd)

C.G. Range Longitudinal limits (mm)



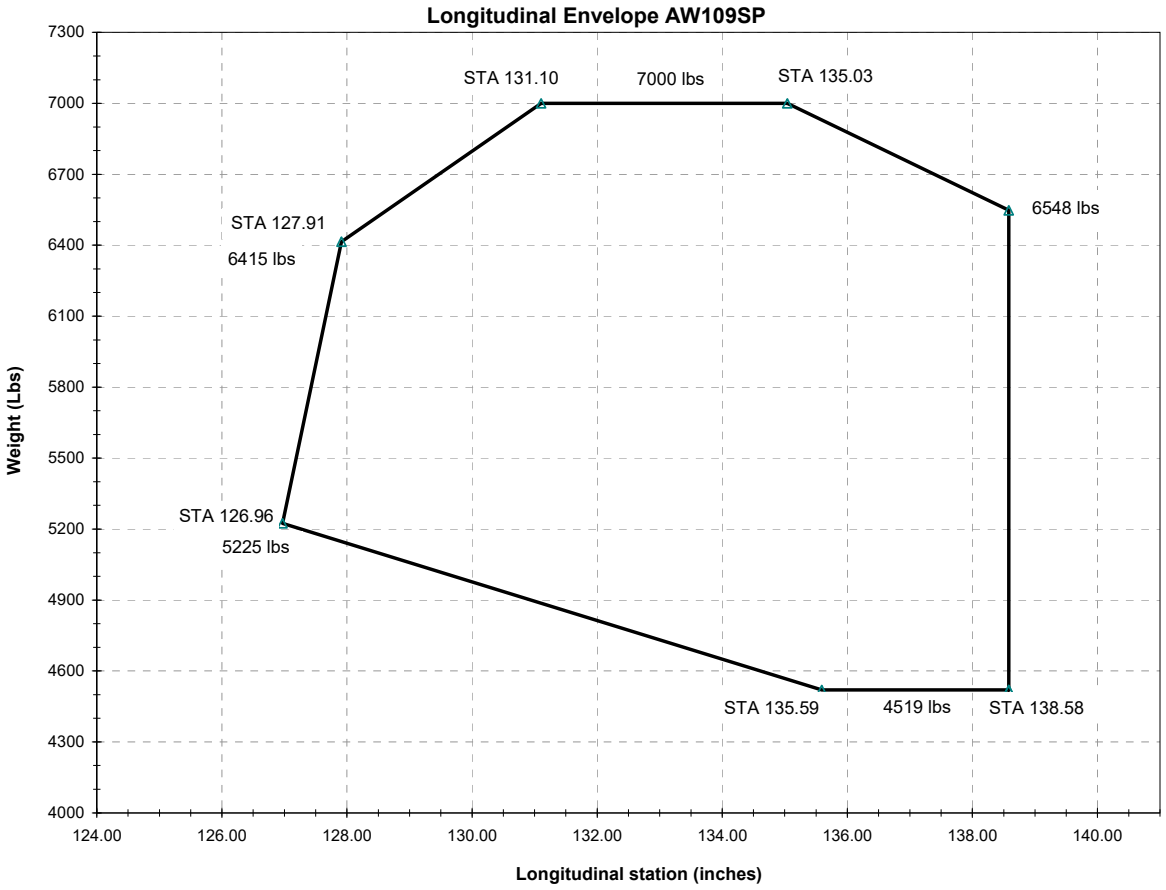
X. Model AW109SP (Normal Category Helicopter) (cont'd)

Lateral (mm)



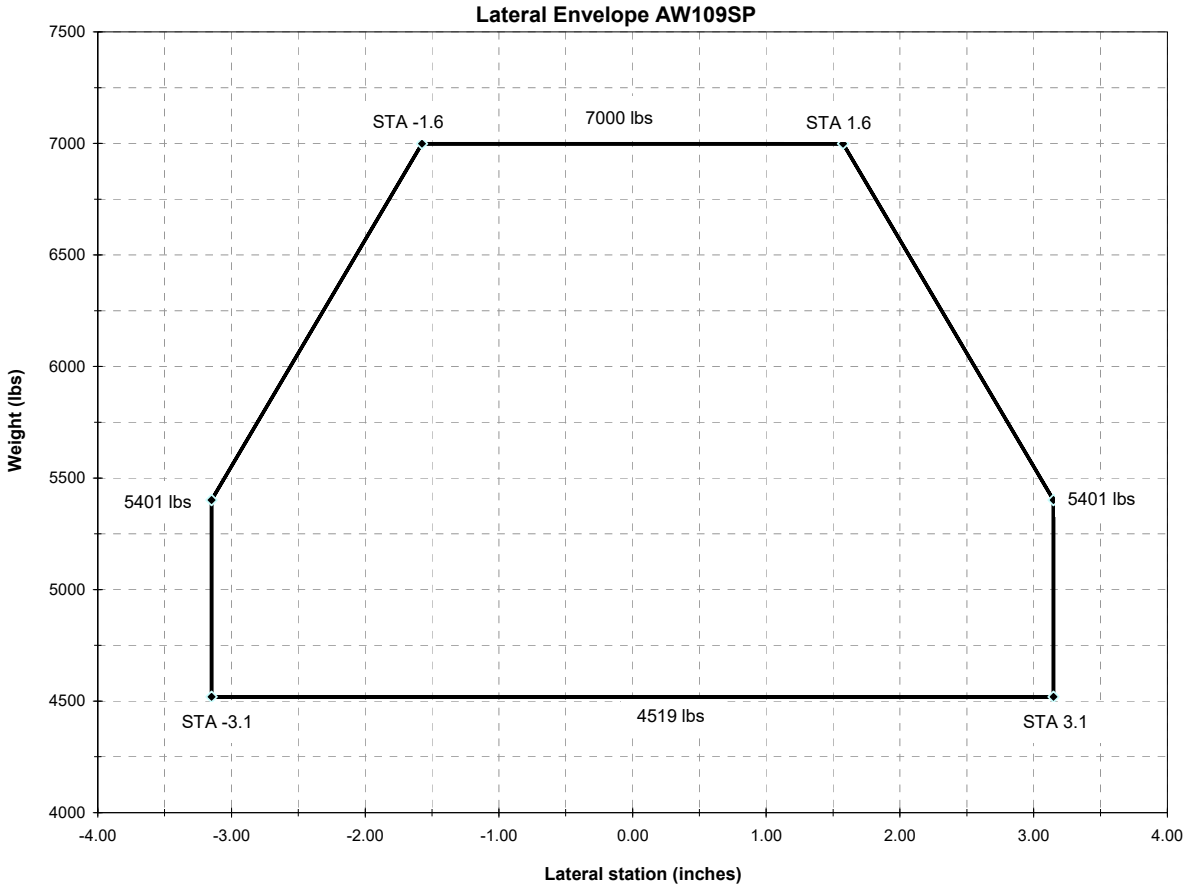
X. Model AW109SP (Normal Category Helicopter) (cont'd)

Longitudinal limits (inch)



X. Model AW109SP (Normal Category Helicopter) (cont'd)

Lateral (inch)



Empty Weight & CG Range.	(None)
Maximum Take Off Weight.	3,175 Kg (7,000 lb)
Minimum Crew.	One pilot at Sta 1,328 mm (52,3 in) to 1,404 mm (55,3 in) The pilot must be seated in the right seat
Maximum Passengers.	7
Maximum Baggage.	120 Kg (264 lb) at Sta 4,880 mm to 6430 mm ref .RFM for baggage load distribution Maximum floor loading for baggage compartment: 500 Kg/m^2 (102 b/ft2) Maximum load per tie-down fitting: 91 Kg (200 lb)
Fuel Capacity.	Total Usable: 148.5 US Gal (562 lt). *See NOTE 1 for unusable fuel.*
Oil Capacity Engines. PW 207C	1.38 US Gal (5.25 lt) for each engine. *See NOTE 1 for undrainable oil.*
Oil Capacity Transmission.	3,09 US Gal (11,7 lt). *See NOTE 1 for undrainable oil.*
Maximum Operating Altitude. PW 207C	20,000 ft (6,096 m)
Blade Control Movements	Main -1° / +12° Tail RH pedal –7° LH pedal + 24° For rigging information refer to the Model AW109SP Maintenance Manual

DATA PERTINENT TO ALL MODELS

Datum.

Longitudinal station 0 (datum) is 1835 mm (72 in) forward of the front jack point.
For the A119 and AW119 MKII, longitudinal station 0 (datum) is 1785 mm (70.3 in) forward of the front jack point.
For the A109S and AW109SP, longitudinal station 0 (datum) is 1635 mm (64,37 in) forward of the front jack point.
For the A109S equipped with Trekker Kit P/N 109G0000F01, longitudinal station 0 (datum) is 1580mm (62.2 in) forward of the front jack point.
Lateral station 0 (datum) is ± 450 mm (± 18 in) inboard of each main jack point and coincides with the rotorcraft longitudinal plane of symmetry.

Leveling Means.

A109, A109A, A109AII, A109C, A109K2 and A119 plumb line from ceiling reference point to index plate on floor of passenger cabin.
For A109E, A109S, A109S with Trekker Kit P/N 109G0000F01 and AW109SP the leveling is performed by a water level put on the datum plate located on the cabin roof, RH side.
AW119MKII uses either one of the two leveling methods described above.

Serial Numbers Eligible.

A ENTE NAZIONALE AVIAZIONE CIVILE (ENAC) Certificate of Airworthiness for Export endorsed as noted under import requirements must be submitted for each individual rotorcraft for which application for certification is made.

For the A109:	the eligible Serial Numbers are from 7106 to 7109.
For the A109A:	the eligible Serial Numbers are from 7110 to 7114 (P/N assy 109-9000-01-11), from 7115 to 7125 (P/N Assy 109-9000-01-15), from 7126 to 7135 (P/N Assy 109-9000-01-19), from 7136 to 7165 (P/N Assy 109-9000-01-23), from 7166 to 7255 (P/N Assy 109-9000-01-27).
For the A109A II:	the eligible Serial Numbers are from 7256 to 7600.
For the A109C:	the eligible Serial Numbers are from 7601 to 7800.
For the A109K2:	the eligible Serial Numbers are from 10001 to 10100.
For the A109E:	the eligible Serial Numbers are from 11001 to 11999
For the A119:	the eligible Serial Numbers are from 14003 to 14700.
For the AW119 MKII:	the eligible Serial Numbers are from 14701 to 14900.

For the AW119MKII equipped with G1000H Kit P/N 109G4600F01-101 and G1000H NXi Kit P/N 10G4600F01-201: the eligible Serial Numbers are from 14901 to 15999.

For the A109S:	the eligible Serial Numbers are 22001, 22003 through 22087, 22089 through 22200
For the A109S equipped with Trekker Kit P/N 109G0000F01:	the eligible Serial Numbers are 22002, 22088, 22701 to 22999
For the AW109SP	the eligible Serial Numbers are S/N 22201, 22203, from 22214 to 22362, 22364 and subs

Certification Basis.

FAR 21.29 and FAR Part 27 dated February 1, 1965, including Amendments 27-1 through 27-8.

FAR Part 29 dated February 1, 1965, para. 29.903(b), for Category "A" engine isolation.

Special Conditions for Agusta Model A109 helicopter No. 27-54-EU-17, issued on June 26, 1973.

Equivalent safety in lieu of compliance shown for:
-FAR 27.1189, re shutoff means
-FAR 27.1305(d), re fuel quantity indicator for A109A up to S/N 7165.
-FAR 27.927(c) at amendment 27-12 elected by the applicant

For the Model A109K2, in addition to the above:

-27.25	Amendment 11
-27.79	Amendment 21
-27.143	Amendment 21
-27.865	Amendment 11
-27.923	Amendment 12 (for reference only)
-27.939	Amendment 11
-27.951	Amendment 9

	-27.1093	Amendment 20
	For the Model A109E in addition to the above:	
	-27.2	Amendment 28
	-27.21	Amendment 21
	-27.45	Amendment 21
	-27.71	Amendment 21
	-27.141	Amendment 21
	-27.175	Amendment 21
	-27.177	Amendment 21
	-27.401	Amendment 27
	-27.610	Amendment 21
	-27.901	Amendment 23
	-27.903	Amendment 23
	-27.927	Amendment 23
	-27.954	Amendment 23
	-27.1091	Amendment 23
	-27.1189	Amendment 23
	-27.1305	Amendment 23
Certification Basis (Cont'd).	-27.1321	Amendment 13
	-27.1322	Amendment 11
	-27.1323	Amendment 13
	-27.1325	Amendment 13
	-27.1401	Amendment 10
	-27.1505	Amendment 21
	-27.1519	Amendment 21
	-27.1521	Amendment 23
	-27.1527	Amendment 14
	-27.1529	Amendment 18
	-27.1549	Amendment 23
	-27.1555	Amendment 21
	-27.1557	Amendment 11
	-27.1581	Amendment 14
	-27.1583	Amendment 16
	-27.1585	Amendment 21
	-27.1587	Amendment 21

Special conditions for Agusta Models A109D and A109E helicopters, High Intensity Radiated Fields No. 27-ASW-3 issued on June 13, 1996.

Equivalent safety in lieu of compliance shown for: FAR 27.175(c), re static longitudinal stability.

For the Model A119 in addition to the above:

- FAR 27.29, Amdt. 14
- FAR 27.33, Amdt. 14
- FAR 27.65, Amdt. 33
- FAR 27.71, Amdt. 21
- FAR 27.151, Amdt. 21
- FAR 27.161, Amdt. 21
- FAR 27.173, Amdt. 21
- FAR 27.307, Amdt. 26
- FAR 27.321, Amdt. 11
- FAR 27.337, Amdt. 26
- FAR 27.339, Amdt. 11
- FAR 27.351, Amdt. 26
- FAR 27.361, Amdt. 23
- FAR 27.391, Amdt. 26
- FAR 27.395, Amdt. 26
- FAR 27.397, Amdt. 11
- FAR 27.427, Amdt. 27
- FAR 27.501, Amdt. 26
- FAR 27.571, Amdt. 26
- FAR 27.602, Amdt. 38
- FAR 27.603, Amdt. 16
- FAR 27.613, Amdt. 26

Certification Basis (Cont'd).

- FAR 27.663, Amdt. 26
- FAR 27.672, Amdt. 21
- FAR 27.727, Amdt. 26
- FAR 27.779, Amdt. 21
- FAR 27.783, Amdt. 26
- FAR 27.807, Amdt. 26
- FAR 27.863, Amdt. 16
- FAR 27.917, Amdt. 11
- FAR 27.923, Amdt. 29
- FAR 27.955, Amdt. 23
- FAR 27.967, Amdt. 30
- FAR 27.975, Amdt. 30
- FAR 27.977, Amdt. 11
- FAR 27.997, Amdt. 23
- FAR 27.1027, Amdt. 23
- FAR 27.1041, Amdt. 23
- FAR 27.1043, Amdt. 14
- FAR 27.1045, Amdt. 23
- FAR 27.1141, Amdt. 33
- FAR 27.1143, Amdt. 29
- FAR 27.1145, Amdt. 12
- FAR 27.1193, Amdt. 23
- FAR 27.1327, Amdt. 13
- FAR 27.1337, Amdt. 23
- FAR 27.1411, Amdt. 11
- FAR 27.1501, Amdt. 14
- FAR 27.1525, Amdt. 21
- FAR 27.1545, Amdt. 16
- FAR 27.1547, Amdt. 13
- FAR 27.1559, Amdt. 21
- 27 Appendix A, Amdt. 24

For the Model A109S:

- FAR Part 21.29 and FAR Part 27 as quoted in the FAA TCDS H7EU Revision 19 for unchanged area and FAR Part 27 Amendment 27-1 through 27-40 for the new or changed parts with respect to the A109E identified in the Agusta document n° 109-01-182 rev B;
- the exceptions of 27.863.
- Appendix A to Part 27 of Amendment 27-24.
- Appendix B to Part 27 of Amendment 27-19
- FAR 36, Appendix H, Amendment 36-1 through the amendment in effect at the time of conducting the noise tests.
- Special Condition for High Intensity Radiated Field (HIRF), No. 27-ASW-3, issued on June 13, 1996.
- Category A Operations Appendix C to FAR 27.

- The main differences between the A109S and the A109E are as follows
  - Maximum weight increase from 2850 kg to 3175 kg.
  - Stretched passenger cabin.
  - New tail rotor with composite blades.
  - Engine PW207C with new rating.
  - New main and nose landing gear.
  - New engine and transmission oil cooler components.
  - Engine control cable and engine control lever electronic control.
  - Modified two FFC levers.
  - Modified fuel quantity probe and computing unit for new fuel tanks.
  - Updated new limits in Integrated Display System (IDS).
  - Aircraft Battery relocated.
  - New ICS NAT.
  - New Main rotor P/N 109-0112-01-103.
  - New COM/NAV.
  - New pilot seats.
  - Modified passenger seats installation and fuel system.
  - Installed new interior.

For the A109S equipped with Trekker Kit P/N 109G0000F001:

- A109S Certification Basis for the areas not affected by the Trekker Kit installation
- FAR 27 Amdt. Up to 47 for the changed areas as identified in Leonardo document n° 109G0274A001.
- Special Condition: HIRF Protection according to JAA Interim Policy, Paper No. INT/POL/27&29/1 Issue 3, equivalent to FAR 27.1317 Amdt.42
- Equivalent Level of Safety to 14 CFR §27.1305, §27.1521, §27.1549, §27.1309(c), §29.1309(b)(2)(i) and (d): Power Index Indicator.

For the Model AW109SP

- FAR Part 21.29 and FAR Part 27 as quoted in the FAA TCDS H7EU rev 23 for unchanged area and FAR Part 27 Amendment 27-1 through 27-42 for the new or changed parts with respect to the A109S identified in the Agusta document n° 109G0000N062 rev. A and 109G0000N091 rev. B;
- the exceptions of 27.863.
- Appendix A to Part 27 of Amendment 27-24.
- Appendix B to Part 27 of Amendment 27-19
- Category A Operations Appendix C to Part 27
- HIRF Appendix D to part 27.1317
- FAR 36, Appendix H, Amendment 36-1 through the amendment in effect at the time of conducting the noise tests.
- The main differences between the AW109SP and the A109S are as follows

- New main structure made of both metallic and composite material
- New FQGS (Fuel quantity gauging system)
- New Starter Generator (200 amp)

- New AFCS (New design, 4-channels, digital AFCS, using AHRS, RAD Alt, ADU and NAV systems as input equipment, interfaced with cockpit)
- New Avionics (Digital system, integrated with Digital Audio Communication System, 4 EFIS display with synthetic vision system and FMS)

The A109 models with a maximum weight exceeding 6000 lb have been approved following the grant of the exemption No. 6518 dated October 9, 1996.

The Grant of Exemption No. 6648, Regulatory Docket No. 28353 was issued on June 25, 1997, for the A119 in response to Agusta letter of September 27, 1995, requesting exemption from 21.19(b)(1) of Title 14, Code of Federal Regulations (14 CFR) to allow for an amendment to the TC No. H7EU rather than applying for a new Type Certificate due to design change from 2 engine to one engine.

Certification Basis (Cont'd).

For the Model AW119 MKII:

FAR 21.29 and FAR Part 27 as quoted below:

FAR	27.1 a)	Amdt. 37;	FAR	27.2	Amdt. 28;	FAR 27.2 b)2)i)	Amdt. 37;
FAR	27.21	Amdt. 21;	FAR	27.25	Amdt. 36;	FAR 27.27	Amdt. 2;
FAR	27.29	Amdt. 14;	FAR	27.33	Amdt. 14;	FAR 27.45	Amdt. 21;
FAR	27.51	Amdt. /;	FAR	27.65	Amdt. 33;	FAR 27.71	Amdt. 21;
FAR	27.73	Amdt. /;	FAR	27.75	Amdt. 14;	FAR 27.79	Amdt. 21;
FAR	27.141	Amdt. 21;	FAR	27.143	Amdt. 21;	FAR 27.151	Amdt. 21;
FAR	27.161	Amdt. 21;	FAR	27.171	Amdt. /;	FAR 27.173	Amdt. 21;
FAR	27.175	Amdt. 34;	FAR	27.177	Amdt. 21;	FAR 27.231	Amdt. /;
FAR	27.241	Amdt. /;	FAR	27.251	Amdt. /;	FAR 27.301	Amdt. /;
FAR	27.303	Amdt. /;	FAR	27.305	Amdt. /;	FAR 27.307	Amdt. 26;
FAR	27.309	Amdt. /;	FAR	27.321	Amdt. 11;	FAR 27.337	Amdt. 26;
FAR	27.339	Amdt. 11;	FAR	27.341	Amdt. /;	FAR 27.351	Amdt. 34;
FAR	27.361	Amdt. 23;	FAR	27.391	Amdt. 34;	FAR 27.395	Amdt. 26;
FAR	27.397	Amdt. 40;	FAR	27.399	Amdt. /;	FAR 27.401	Amdt. 27;
FAR	27.403	Amdt. 27;	FAR	27.411	Amdt. /;	FAR 27.413	Amdt. 27;
FAR	27.427	Amdt. 27;	FAR	27.471	Amdt. /;	FAR 27.473	Amdt. 2;
FAR	27.501	Amdt. 26;	FAR	27.505	Amdt. /;	FAR 27.547	Amdt. 3;
FAR	27.549	Amdt. 3;	FAR	27.561	Amdt. /;	FAR 27.571	Amdt. 26;
FAR	27.601	Amdt. /;	FAR	27.602	Amdt. 38;	FAR 27.603	Amdt. 16;
FAR	27.605	Amdt. 16;	FAR	27.607	Amdt. 4;	FAR 27.609	Amdt. /;
FAR	27.610	Amdt. 37;	FAR	27.611	Amdt. /;	FAR 27.613	Amdt. 26;
FAR	27.619	Amdt. /;	FAR	27.621	Amdt. 34;	FAR 27.623	Amdt. /;
FAR	27.625	Amdt. /;	FAR	27.629	Amdt. 26;	FAR 27.653	Amdt. 2;
FAR	27.659	Amdt. 2;	FAR	27.661	Amdt. 2;	FAR 27.663	Amdt. 26;

FAR 27.671 Amdt. /; FAR 27.672 Amdt. 21; FAR 27.673 Amdt. 21;
FAR 27.674 Amdt. 26; FAR 27.675 Amdt. 16; FAR 27.681 Amdt. /;
FAR 27.683 Amdt. /; FAR 27.685 Amdt. 26; FAR 27.691 Amdt. /;
FAR 27.695 Amdt. /; FAR 27.723 Amdt. /; FAR 27.725 Amdt. /;
FAR 27.727 Amdt. 26; FAR 27.737 Amdt. /; FAR 27.771 Amdt. /;
FAR 27.773 Amdt. /; FAR 27.775 Amdt. 27; FAR 27.777 Amdt. /;
FAR 27.779 Amdt. 21; FAR 27.783 Amdt. 26; FAR 27.785 Amdt. /;
FAR 27.787 Amdt. /; FAR 27.805 Amdt. 37; FAR 27.807 Amdt. 26;
FAR 27.831 Amdt. /; FAR 27.853 Amdt. 17; FAR 27.855 Amdt. /;
FAR 27.859 Amdt. 23; FAR 27.861 Amdt. 26; FAR 27.863 Amdt. 16;
FAR 27.865 Amdt. 36; FAR 27.871 Amdt. /; FAR 27.901 Amdt. 23;
FAR 27.903 Amdt. 23; FAR 27.907 Amdt. /; FAR 27.917 Amdt. 11;
FAR 27.921 Amdt. /; FAR 27.923 Amdt. 29; FAR 27.927 Amdt. 23;
FAR 27.931 Amdt. /; FAR 27.939 Amdt. 11; FAR 27.951 Amdt. 9;
FAR 27.954 Amdt. 23; FAR 27.955 Amdt. 23; FAR 27.959 Amdt. /;
FAR 27.961 Amdt. 23; FAR 27.963 Amdt. 23; FAR 27.965 Amdt. 12;
FAR 27.967 Amdt. 30; FAR 27.969 Amdt. 23; FAR 27.971 Amdt. /;
FAR 27.973 Amdt. /; FAR 27.975 Amdt. 30; FAR 27.977 Amdt. 11;
FAR 27.991 Amdt. 23; FAR 27.993 Amdt. 2; FAR 27.995 Amdt. /;
FAR 27.997 Amdt. 23; FAR 27.999 Amdt. 23; FAR 27.1011 Amdt. 23;
FAR 27.1013 Amdt. 9; FAR 27.1017 Amdt. /; FAR 27.1019 Amdt. 23;
FAR 27.1021 Amdt. 20; FAR 27.1027 Amdt. 23; FAR 27.1041 Amdt. 23;
FAR 27.1043 Amdt. 14; FAR 27.1045 Amdt. 23; FAR 27.1091 Amdt. 23;
FAR 27.1093 Amdt. 23; FAR 27.1121 Amdt. 12; FAR 27.1123 Amdt. 11;
FAR 27.1141 Amdt. 33; FAR 27.1143 Amdt. 29; FAR 27.1145 Amdt. 12;
FAR 27.1151 Amdt. 33; FAR 27.1163 Amdt. 23; FAR 27.1183 Amdt. 20;
FAR 27.1185 Amdt. 11; FAR 27.1187 Amdt. /; FAR 27.1189 Amdt. 23;
FAR 27.1191 Amdt. 2; FAR 27.1193 Amdt. 23; FAR 27.1194 Amdt. 2;
FAR 27.1195 Amdt. 5; FAR 27.1301 Amdt. /; FAR 27.1303 Amdt. /;
FAR 27.1305 Amdt. 29; FAR 27.1307 Amdt. /; FAR 27.1309 Amdt. 21;
FAR 27.1321 Amdt. 13; FAR 27.1322 Amdt. 11; FAR 27.1323 Amdt. 13;
FAR 27.1325 Amdt. 13; FAR 27.1327 Amdt. 13; FAR 27.1329 Amdt. 21;
FAR 27.1337 Amdt. 23; FAR 27.1351 Amdt. 13; FAR 27.1353 Amdt. 14;
FAR 27.1357 Amdt. 13; FAR 27.1361 Amdt. /; FAR 27.1365 Amdt. /;
FAR 27.1367 Amdt. /; FAR 27.1381 Amdt. /; FAR 27.1383 Amdt. /;
FAR 27.1385 Amdt. /; FAR 27.1387 Amdt. 7; FAR 27.1389 Amdt. /;
FAR 27.1391 Amdt. /; FAR 27.1393 Amdt. /; FAR 27.1395 Amdt. /;
FAR 27.1397 Amdt. 6; FAR 27.1399 Amdt. 2; FAR 27.1401 Amdt. 10;
FAR 27.1411 Amdt. 11; FAR 27.1413 Amdt. 21; FAR 27.1435 Amdt. /;
FAR 27.1461 Amdt. 2; FAR 27.1501 Amdt. 14; FAR 27.1503 Amdt. /;
FAR 27.1505 Amdt. 21; FAR 27.1509 Amdt. /; FAR 27.1519 Amdt. 21;
FAR 27.1521 Amdt. 29; FAR 27.1523 Amdt. /; FAR 27.1525 Amdt. 21;
FAR 27.1527 Amdt. 14; FAR 27.1529 Amdt. 18; FAR 27.1541 Amdt. /;
FAR 27.1543 Amdt. /; FAR 27.1545 Amdt. 16; FAR 27.1547 Amdt. 13;
FAR 27.1549 Amdt. 29; FAR 27.1551 Amdt. /; FAR 27.1553 Amdt. /;
FAR 27.1555 Amdt. 21; FAR 27.1557 Amdt. 11; FAR 27.1559 Amdt. 21;
FAR 27.1561 Amdt. /; FAR 27.1565 Amdt. 2; FAR 27.1581 Amdt. 14;
FAR 27.1583 Amdt. 16; FAR 27.1585 Amdt. 21; FAR 27.1587 Amdt. 21;
FAR 27.1589 Amdt. /; FAR 27 Appendix A Amdt. 24.

- Special Condition: HIRF Protection according to JAA Interim Policy, Paper No. INT/POL/27&29/1 [only for Electronic Engine Control System]

- Special Condition: HIRF Protection according to JAA Interim Policy, Paper No. INT/POL/27&29/1 Issue 3 [only for “G1000H Installation Kit” P/N 109G4600F01-101 and for G1000H NXi Installation Kit P/N 109G4600F01-201]

- ELOS Memo AT04305RD-R-F-01 for G1000H NXi Installation Kit P/N 109G4600F01-201 Power Index Indicator

- FAR 36, Appendix H, Amendment 36-28, January 2006 for the noise level determination.

- For Pilot and Copilot Crashworthy Seats Installation Kit P/N 109G2510F04 and for Passenger Crashworthy Seats Installation Kit P/N 109G2520F45, installed, 14 CFR

27.561 Amdt. 32; 14 CFR 27.562 Amdt. 25; 14 CFR 27.625 Amdt. 35; and 14 CFR 27.785 Amdt. 35 apply. See Note 21 for eligible serial helicopters for installation.

The Certification basis applicable to the AW119 MKII model is identified in the Agusta document No. 109G0000N077.

Date of Application for Type Certificate: February 18, 1971.

Type Certificate No. H7EU issued June 1, 1975;

amended	April 2, 1976	to include Model A109A;
amended	December 4, 1981	to include Model A109AII;
amended	August 19, 1989	to include Model A109C;
amended	January 15, 1993	to include Model A109K2;
amended	August 26, 1996	to include Model A109E;
amended	April 28, 2000	to include Model A119.;
amended	July 20, 2006	to include Model A109S;
amended	October 22, 2007	to include Model AW119 MKII.
amended	October 14, 2010	to include Model AW109SP

For IFR operations See NOTE 6.

The Italian ENAC originally type certificated this under its type certificate number (A156). The FAA validated this product under U.S. Type Certificate Number (H7EU). Effective September 28, 2003, the European Aviation Safety Agency (EASA) began oversight of this product on behalf of the Italian ENAC.

The U.S. airworthiness certification basis for aircraft type certificated under FAR Section 21.29 and exported by the country of manufacture is FAR Sections 21.183(c) or 21.185(c).

The U.S. airworthiness certification basis for aircraft type certificated under FAR Section 21.29 exported from countries other than the country of manufacture (e.g. third party country) is FAR Sections 21.183(d) or 21.183(b).

Import Requirements.

To be considered eligible for operation in the United States, each aircraft manufactured under this type certificate must be accompanied by a certificate of airworthiness for export or certifying statement endorsed by the exporting foreign civil airworthiness authority which states (in the English language):

The FAA can issue a U.S. airworthiness certificate based on a NAA Export Certificate of Airworthiness (Export C of A) signed by a representative of the Italian ENAC or EASA on behalf of the European Community.

The Export C of A should contain the following statement:
"The aircraft covered by this certificate has been examined, tested, and found to comply with the EASA Type Certificate Number R.005 (formerly Italian ENAC TC Number A156) approved under the U.S. Type Certificate Number H7EU and to be in a condition for safe operation."

Refer to the applicable bilateral agreement to verify eligibility for import based on the scope of the agreement, to identify any required statements on the export certificate of airworthiness (or equivalent document), and for procedures for coordinating exceptions to conformity statements on these documents. Refer to FAA Order 8130.2, Airworthiness Certification of Aircraft, provisions for Import Aircraft, for requirements for issuance of an airworthiness certificate.

Equipment.

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the rotorcraft for certification.

In addition, the following items of equipment are required:

(a) Approved Helicopter Flight Manual:

1. Model A109: A109 Helicopter Flight Manual dated May 21, 1975 or later revision.
2. Model A109A: A109A Helicopter Flight Manual dated May 16, 1979 or later revision.

NOTE: for operations at 2450 Kg (5400 lbs) pages 1-2A, 1-2B and 1-12A are applicable.

3.	Model A109A II:	A109A II Helicopter Flight Manual dated June 2, 1981 or later revision.
4.	Model A109C:	A109C Helicopter Flight Manual dated October 2, 1989 or later revision.
5.	Model A109K2:	A109K2 Helicopter Flight Manual dated January 23, 1992 or later revision.
6.	Model A109E: (PW206C)	A109E Rotorcraft Flight Manual dated May 31, 1996 or later revision
7.	Model A119:	A119 Rotorcraft Flight Manual dated April 19, 2000 or later revision.
8.	Model A109E:	A109E Rotorcraft Flight Manual No. 109-08-053 and (TM 2K1) relevant Section 5 "Optional Equipment" No. 109-08-057, dated September 10, 2001 or later revision.
9.	Model A109S	A109S Rotorcraft Flight Manual No. 109G0040A013 and No. 109G0040A014 RFM Optional Equipment Supplements. Rotorcraft Flight Manual No. 109G0040A034 for A109S with Trekker Kit P/N 109G0000F01.
10.	Model AW119 MKII	AW119 MKII Rotorcraft Flight Manual No. 109G0040A017 or later revision AW119MKII equipped with "G1000H Installation Kit" P/N 109G4600F01-101and AW119MKII equipped with "G1000H NXi Installation Kit" P/N 109G4600F01-201 Rotorcraft Flight Manual No. 109G0040A033 or later revision
11.	Model AW109SP	AW109S Rotorcraft Flight Manual No. 109G0040A018 and No. 109G0040A019 RFM Optional Equipment Supplements

(b) Low-rotor-rpm and engine-failure warning systems in accordance with Agusta drawing Nos. 109-0729-21 or 109-0729-31 and 109-0729-22 for A109A, A109AII and A119 Models; 109-0741-06 for Model A109C; 109-0741-27 and 109-0752-40 for Model A109K2; 109-0753-28 for Model A109E and A109S; 109-0900-66 for A119 Model equipped with Integrated Display System and AW119 MKII Model.

(c) OAT indicator MS28028-1
On A109E, A109S, A119 equipped with Integrated Display System and AW119 MKII the OAT data are shown on the IDS system and the sensor is P/N E22307-2-4.

Required and optional approved equipment are listed in the:

A109	Equipment List Report No. 109-07-01;
A109A	Equipment List Report No. 109-07-03;
A109AII	Equipment List Report No. 109-07-06;
A109C	Equipment List Report No. 109-07-09;
A109K2	Equipment List Report No. 109-07-14;
A109E	Equipment List Report No. 109-07-16;
A119	Equipment List Report No. 109-07-19.
A109S	Equipment List Report No. 109G0840W017 Equipment List Report No. 109G0840W048 for A109S with Trekker Kit P/N 109G0000F01
AW119 MKII	Equipment List Report No. 109G0840W030 Equipment List Report No. 109G0840W046 for "G1000H Installation Kit" and for "G1000H NXi Installation Kit"
AW109SP	Equipment List Report No. 109G0840W040

For IFR operations see NOTE 6.

Placards. Placards listed in the EASA/ENAC-approved Helicopter Flight Manual must be displayed in the appropriate location.

Service Information. Information essential for proper maintenance of the rotorcraft is presented in the

following documentation which must be supplied with each rotorcraft at time of delivery:

A109A/A109AII/A109C A109K2 A109E Airworthiness Limitations Section (Chapter 4) of the Maintenance Manual.

A109S Airworthiness Limitations Section (Chapter 4) of the Doc n° 0B-A-AMPI-00-P Aircraft Maintenance Planning Information .

A109A/A109AII/A109C A109K2 A109E inspection requirements and component overhaul schedule (chapter 5) of the Maintenance Manual.

A109A/A109AII/A109C A109K2 A109E Maintenance Manual.

A109S Airworthiness Limitations Section (Chapter 4) of the Doc n° 0B-A-AMPI-00-P Aircraft Maintenance Planning Information.

A109S with Trekker Kit P/N 109G0000F01 Airworthiness Limitation Section (Chapter 4) of the Doc n° 0B-D-AMPI-00-P Aircraft Maintenance Planning Information.

A119 ALS (Chapter 04) of the A119 / AW119 MKII Maintenance Planning Manual.

AW119 MKII ALS (Chapter 04A) of the A119 / AW119 MKII Maintenance Planning Manual.

NOTE: Mission profiles using more cycles than those quoted in the A119 and AW119 MKII ALS shall be communicated to the aircraft manufacturer for retirement lives recalculation and approval.

A119 and AW119 MKII inspection requirements and component overhaul schedule (Chapter 05) of the A119 / AW119 MKII Maintenance Planning Manual.

AW109SP Airworthiness Limitations Section (Chapter 4) of the Doc n° 0B-B-AMPI-00-P Aircraft Maintenance Planning Information and **inspection requirements and component overhaul schedule** (Chapter 5) of the Doc n° 0B-B-AMPI-00-P Aircraft Maintenance Planning Information

“Agusta Service bulletins, structural repair manuals, vendor manuals, rotorcraft flight manuals, and overhaul and maintenance manuals, which contain a statement that the document is European Aviation Safety Agency/ ENTE NAZIONALE AVIAZIONE CIVILE (EASA/ENAC) approved, are accepted by the FAA and are considered FAA approved.

These approvals pertain to the type design only.”

Mandatory Bulletins will be identified as such. Each of the documents listed below must state that it is approved by the
European Aviation Safety Agency (EASA) or – for approvals made before September 28, 2003 – by the Italian ENAC. Any such documents are accepted by the FAA and are considered FAA approved.

- Service Bulletin,
- Structural repair manuals,
- Vendor manuals,
- Aircraft flight manuals, and
- Overhaul and maintenance manuals.

This applies only to the acceptance of type design data.

NOTE 1. Current weight and balance report including list of equipment included in the certificated empty weight and loading instructions must be provided for each rotorcraft at the time of the original certification.

The certificated empty weight and corresponding CG location must include undrainable oil and undrainable fuel.

Undrainable engine oil is zero Kg. for all models except for the A109E where the undrainable oil is 2.09 Kg./4.61 lbs (0.567 U.S.gal/2.15 lt) at the sta. 4280 mm (168.5 in) and for the A119 and AW119 MKII where the undrainable oil is 1.6 Kg./3.52 lbs (0.433 U.S. gal/1.64 lt) at the sta. 4673 mm (183.9 in).and for the A109E where the undrainable oil is 1.8 /Kg/3.96 lbs (0.486 U.S gal/1.84 lt) at sta 4280 mm (168.5 in).

Unusable fuel is 7 Kg /15 lbs (2.4 U.S. gal./9 lt.) at sta. 3750 mm (148°) for Model A109A/AII/C, 9 Kg./20 lbs (3.2 U.S. gal./12 lit.) at sta. 3750 mm (148°) for Model A109K2, 8 Kg/17.6 lbs (2.66 U.S. gal./10 lt) at sta 3320 mm (131 in) for Model A109E, and 8 Kg/17.6 lbs (2.64 U.S. gal./10 lt) at sta 3320 mm (130.7 in) for Models A119 and AW119 MKII , and 9.6Kg/21.16 lbs (3.17 U.S gal /12 lt) at sta 3761 mm (148 in) for Model A109S and AW109SP.

NOTE 2. All placards indicated in the Rotorcraft Flight Manual (RFM) must be installed in the appropriate location.

NOTE 3. Life-limited components and approved retirement times of the Model A109A/A109AII/A109C/A109K2/ A109E/A119 /A109S/AW119 MKII and AW109SP are listed in the Chapter 04 “Airworthiness Limitations” of the applicable “Maintenance Manual” and must be replaced as prescribed therein.

NOTE 4. For operation below 4ºC (40ºF) of the Model A109A/AII/C the use of anti-ice additive is authorized, but is not mandatory due to aircraft anti-ice fuel filter installation. Below 4ºC (40ºF) the AVGAS JET FUEL MIXTURE may be used as an alternative fuel. Refer to Allison Operation and Maintenance Manual for AVGAS mix, cold weather fuel and blending instructions.

For A109E operation below 4ºC (40ºF) the use of anti-ice additive is authorized but not mandatory due to aircraft anti-ice fuel filter installation. For additive requirements and blending procedures refer to Pratt & Whitney or Turbomeca manuals.

For A109S operation below 4ºC (40ºF) the use of anti-ice additive is authorized but not mandatory due to aircraft anti-ice fuel filter installation. For additive requirements and blending procedures refer to Pratt & Whitney PW207C engine /maintenance /installation manual

For A119 and AW119 MKII operation below 4°C (40°F) the use of anti-ice additive is not mandatory, since the engine is equipped with a fuel heater.

NOTE 5. For helicopters up to and including S/N 7114 not equipped with adjustable seat kit P/N 109-0700-49-1, moment arm of pilot and forward passenger seat is 1650 mm (65 in) from sta. 0.

NOTE 6.

a. Model A109A helicopters, S/N 7107, 7130 and subsequent, are eligible for day and night IFR operations, with one pilot or with two pilots, when "IFR" installation Agusta Kit No. 109-0810-22, Rev. E or later FAA-approved revision is incorporated and the helicopter is operated in accordance with Model A109A Flight Manual IFR Supplement No. 1 approved by RAI under date of July 16, 1978 and subsequent approved revisions. (NOTE: the above-noted kit and flight manual supplement comprise the Agusta version of FAA-approved STC No. CH2699SW).
b. Model A109A II and A109C helicopters S/N 7256, and subsequent, are eligible for day and night IFR operations with one, or with two pilots when "IFR" installation Kit No. 109-0810-22, Rev. E or, later FAA approved revision, is incorporated and the helicopter is operated in accordance with Model A109 II and A109C Rotorcraft Flight Manuals.

c. Model A109K2 helicopters S/N 10001 and subsequent, are eligible for day and night, single pilot IFR operation when IFR installation Agusta Kit No. 109-0810-22-135 and subsequent approved dash numbers are incorporated.
Certification Basis:
- Appendix B to Part 27 - Airworthiness criteria for helicopter instrument flight - Amdt. 27.19.
- FAR Part 27 Paragraph 27.672 Amdt. 21; 27.1309 Amdt 21; 27.1329 Amdt 21; 27.1335 Amdt. 13.
The helicopter shall be operated in accordance with the Model A109K2 Flight Manual IFR Supplement No. 2.

d. Model A109E Helicopters S/N 11001 and subsequent, are eligible for day and night, single pilot IFR operation when IFR installation Agusta Kit P/N 109-0810-22-143 and subsequent approved dash numbers are incorporated.
Certification Basis:
- Appendix B to Part 27 - Airworthiness criteria for helicopter instrument flight - Amdt. 27.19.
- FAR Part 27 Paragraph 27.672 Amdt. 21; 27.1309 Amdt 21; 27.1329 Amdt 21; 27.1335 Amdt. 13.
The helicopter shall be operated in accordance with the Model A109E Flight Manual.

e. Model A109S Helicopters S/N 22001 and subsequent, are eligible for day and night, single pilot IFR operation. The IFR is part of the Basic Certification.

f. Model AW109SP Helicopters S/N 22201, 22203, and 22214 and subsequent, are eligible for day and night, single pilot IFR operation. The IFR is part of the Basic Certification

NOTE 7. Model A109A helicopters are eligible for operations at maximum weight of 2600 kg (5732 lb.) when Agusta Technical Bulletin No.109-20 and subsequent approved revisions are incorporated. For Model A109A helicopters not incorporating the Agusta Technical Bulletin No. 109-20, the following limitations are to be applied.

- Airspeed limits
Never exceed speed (V_{NE}) 168 kts IAS
For reduction of VNE with altitude and OAT, see page 1-2A of the FAA-approved Rotorcraft Flight Manual.

- CG Range (Gear Down)
Longitudinal Limits --
Refer to diagram on page 5 (Model A109A) for weight up to 2450 kg. (5400 lb.)

Lateral Limits --
Refer to diagram on page 6 (Model A109A) for weight up to 2450 kg. (5400 lb.)

- Maximum Weight 2450 kg (5400 lb.)
See Page 1-2B of the FAA-approved Rotorcraft Flight Manual.

- Maximum Operating Altitude 4560m (15000 ft)
See Page 1-2B of the FAA-approved Rotorcraft Flight Manual.

NOTE 8. For Models A109AII, A109C, and A109K2, the auxiliary fuel tank installation P/N 109-0810-56 adds a total fuel capacity of 40.8 U.S. Gal. (153 lit.) at sta. 4708 mm (185.3 in.) of which 40 U.S. Gal. (150 lit.) is usable.
For Model A109E, the fuel tank installation P/N 109-0811-49 adds a total of fuel capacity of 70 U.S. gal. (265 lit.) all usable.
For Model A109S the fuel tank installation P/N 109-0813-32 adds a total of fuel capacity of 060.76 U.S. Gal. (230 lit) all usable.
For Model A119 and AW119 MKII the fuel tank installation P/N 109-0811-49 adds a total of fuel capacity of 70 US Gal. (265 lit) all usable.
For Model AW109SP the fuel tank installation P/N 109-0813-32 adds a total of fuel capacity of 60.76 U.S. Gal. (230 lit) all usable

NOTE 9. The Models A109/A109A/A109AII/A109C/A109K2/A109E/A119/A109S/AW119 MKII /AW109SP are identified by the general assembly drawing as follows:

109-9000-01-5	for A109
109-9000-01-11/15/19/23/27	for A109A
109-9000-01-31	for A109AII
109-9000-01-135	for A109C
109-9000-01-139	for A109K2
109-9000-01-149	for A109E
119-9000-01-107	for A119
109-9000-09-101	for A109S
119-9000-01-111	for AW119 MKII
109-9000-09-105	for AW109SP

NOTE 10. The model A109K2 is eligible for operations on clear airfield and helipad with the critical engine failure concept when the installation P/N 109-0822-47 (all the approved dashes) is incorporated and the helicopter is operated in accordance with the Model A109K2 Flight Manual Supplement No. 3 "Take-off and landing procedures and performance data on clear airfield and helipad with critical engine failure".

Certification Basis:
That applicable to the A109K2 plus JAR 29.45(a), (b)(2) Amdt. Base; JAR 29.49(a) Amdt. Base; JAR 29.51 Amdt. Base; JAR 29.53 Amdt. Base; JAR 29.55 Amdt. Base; JAR 29.59 Amdt. Base; JAR 29.60 Amdt. Base; JAR 29.61 Amdt. Base; JAR 29.62 Amdt. Base; JAR 29.64 Amdt. Base; JAR 29.65 (a) Amdt. Base; JAR 29.67 (a) Amdt. Base; JAR 29.75 Amdt. Base; JAR 29.77 Amdt. Base; JAR 29.79 Amdt. Base; JAR 29.81 Amdt. Base; JAR 29.85 Amdt. Base; JAR 29.87 (a) Amdt. Base; FAR 29.861(a) Amdt. 26; FAR 29.901(c) Amdt. 25 for engines installations only; FAR 29.901 (c) Amdt. 25. For engines installation only; FAR 29.903(b), (c), (e) Amdt. 31; FAR 29.908(a) Amdt. 25; FAR 29.923 Amdt. 23; FAR 27.927 (a), (b) Amdt. 12; FAR 29.927 (c)(1) Amdt. 26; FAR 29.953 (a) Amdt. Base; JAR 29.1027(a) Amdt. Base; JAR 29.1045 (a)(1), (b), (c), (d), (f) Amdt. Base; JAR 29.1047 (a) Amdt. Base; JAR 29.1181 (a) Amdt. Base; JAR 29.1187 (e) Amdt. Base; JAR 29.1189 (c) Amdt. Base; JAR 29.1191 (a)(1) Amdt. Base; JAR 29.1193 (e) Amdt. Base; JAR 29.1305 (a)(6), (b) Amdt. Base; JAR 29.1309 (b)(2)(i), (d) Amdt. Base; JAR 29.1323 (e)(1) Amdt. Base; JAR 29.1331 (b) Amdt. Base; JAR 29.1587 (a) Amdt. Base. The JAR requirements listed above meet or exceed the FAR Part 27 and FAR Part 29 CAT A. requirements.

NOTE 11. The Model A109E is eligible for operations on clear airfield and helipad with the “Equivalent Category A” when the installation P/N 109-0811-39 (all the approved dashes) is incorporated and the helicopter is operated in accordance with the Model A109E Flight Manual Supplement No. 12 Equivalent Category “A” operations.

In addition to the paragraphs of the Certification Basis, the A109E must comply also with the following paragraphs:
JAR 29.45(a),(b)(2) Amendment base; JAR 29.49(a) Amendment base; JAR 29.51 Amendment base; JAR 29.53 Amendment base; JAR 29.55 Amendment base, JAR 29.59 Amendment base; JAR 29.60 Amendment base; JAR 29.61 Amendment base; JAR 29.62 Amendment base; JAR 29.64 Amendment base; JAR 29.65 (a) Amendment base; JAR 29.67 (a) Amendment base; JAR 29.75 Amendment base; JAR 29.77 Amendment base; JAR 29.79 Amendment base; JAR 29.81 Amendment base; JAR 29.85 Amendment base; JAR 29.87 (a) Amendment base; (JAR 29.571 Amendment base Fatigue evaluation of structure.) AC Material only: AC 29-2A Item 230 Paragraph 10; JAR 29.861 (a) Amendment base; JAR 29.901 (c) Amendment base; JAR 29.903 (b), (c), (e) Amendment base; JAR 29.908 (a) Amendment base; JAR 29.927 (c)(1), JAR 29.953(a) Amendment base; JAR 29.1027(a) Amendment base; JAR 29.1045 (a)(1), (b), (c), (d), (f) Amendment base; JAR 29.1047 (a) Amendment base; JAR 29.1181(a)(1) Amendment base; JAR 29.1193 (e) Amendment base; JAR 29.1195(a), (d) Amendment base; JAR 29.1305 (a)(6),(b) Amendment base; JAR 29.1309 (b)(2)(i), (d) Amendment base; JAR 29.1323 (c)(1) Amendment base; JAR 29.1331 (b) Amendment base; JAR 29.1351(d)(2) Amendment base; JAR 29.1587 (a) Amendment base. The JAR requirements listed above meets the FAR Part 27 and FAR Part 29 CAT A. requirements.

NOTE 12. For the models A109K2 and A109E that has been certified with ditching provisions in accordance with RFM supplements No. 22 & 21 respectively the certification basis has been updated adding with the following paragraphs: FAR 27.563 Amendment 26, FAR 27.801 Amendment 11, FAR 27.807 Amendment 26, FAR 27.1411 Amendment 11, FAR 27.1415 Amendment 11.

NOTE 13. The model A109E, A109S and AW109SP rotorcraft employ electronic engine controls, commonly named Full Authority Digital Engine Controls (FADEC), and is recognized to be more susceptible to Electromagnetic Interference (EMI) than rotorcraft that have only manual (non-electronic) controls. EMI may be the result of radiated or conducted interference. For this reason modifications that add or change systems that have the potential for EMI, must be either qualified to a standard acceptable to the FAA or tested at the time of installation for interference to the FADEC. This type of testing must employ the particular FADEC’s diagnostic techniques and external diagnostic techniques. The test procedure must be FAA approved.

NOTE 14. The model A109E may be equipped with either PW206C or TM 2K1 turboshaft engines. Changes to the approved TC holder Type Design, that may have an effect on engine installation or operation, must be limited in applicability to the engine installation for which they have been tested and approved.

NOTE 15. Model A109 helicopters may be converted to Model A109A helicopters in accordance with EASA/ENAC-approved Service Instructions No. A109-1.

NOTE 16. Cabin Interior and Seating Configurations must be approved.

NOTE 17. Any changes to the type design of this helicopter by means of an amended type certificate (TC), supplemental type certificate (STC), or amended STC, requiring instructions for continued airworthiness (ICA's) must be submitted thru the project aircraft certification office (ACO) for review and acceptance by the Fort Worth -Aircraft Evaluation Group (FTW-AEG) Flight Standards District Office (FSDO) prior to the aircraft delivery, or upon issuance of the first standard airworthiness certificate for the affected aircraft, whichever occurs later as prescribed by Title 14 CFR 21.50. Type design changes by means of a field approval that require ICA's must have those ICA's reviewed by the field approving FSDO.

NOTE 18. Effective August 24, 2006, the Agusta model A119, from serial number 14517 up to 14700, and the Agusta model AW119 MKII, from serial number 14701 and on, are approved for production at Agusta Aerospace Corporation's (AAC), Philadelphia facility under Production Certificate PC 120NE. This PC is based on a Decision Paper / Licensing Agreement approved on February 24, 2005. All technical data previously developed by Agusta S.p A. in support of this model and approved by ENAC, and further approved by the FAA under the requirements of FAR 21.29 and the BASA between the US and Italy, are still in effect and any revisions to that data will still need to be FAA approved as previously agreed upon prior to the issuance of this PC. All export tags will need to document that this model and serial number were manufactured in Agusta AAC's Philadelphia facility.

Effective 01 June 2011, the Agusta Aerospace Corporation name was changed to AgustaWestland Philadelphia Corporation.

Effective 02 December 2011, PC120NE was changed to reflect the Agusta Aerospace Corporation name change to AgustaWestland Philadelphia Corporation

NOTE 19. The Model A109S is eligible for Category A operations when the installation P/N 109-0823-98 (all the approved dash numbers) is incorporated and the helicopter is operated in accordance with the Model A109S Rotorcraft Flight Manual No. 109G0040A013 and No. 109G0040A014 RFM Optional Equipment Supplements No. 7 Category A Operations.

In addition to the paragraphs of the Certification Basis, the A109S complies with JAR 27 Appendix C.

The JAR requirements listed in the JAR 27 Appendix C meets the Appendix C to FAR PART 27 Criteria for Category A.

The Model A109S with Trekker Kit P/N 109G0000F01 is eligible for Category A operations when the Engine Fire Extinguisher Kit P/N 109-0811-39-109 is installed.
Refer to RFM 109G0040A034 Supplement No. 4 Category A Operations.

In addition to the paragraphs of the Certification Basis, the A109S with Trekker Kit P/N 109G0000F01 complies with CS 27 Amdt.3 Appendix C.

The CS requirements listed in the CS 27 Appendix C meets the Appendix C to FAR PART 27 Criteria for Category A. Refer to Leonardo document No. 109G0274A001.

NOTE 20. The Model AW109SP is eligible for Category A operations when operated in accordance with the Model AW109SP Rotorcraft Flight Manual No. 109G0040A018 and No. 109G0040A019 RFM Optional Equipment Supplements No. 4 Category A Operations.

In addition to the paragraphs of the Certification Basis, the AW109SP complies with CS 27 Appendix C.

The CS requirements listed in the CS 27 Appendix C meets the Appendix C to FAR PART 27 Criteria for Category A.

NOTE 21. For models AW119MKII, Pilot and Copilot Crashworthy Seats Installation Kit P/N 109G2510F04 and Passenger Crashworthy Seats Installation Kit P/N 109G2520F45 are eligible for installation on helicopters S/N 15001 and subs.

….. END …..